THE JOURNAL OF

MEDICAL EDUCATION

SEPTEMBER 1958 • VOLUME 33 • NUMBER 9

614 **Thomas Bond, 1713–84. First Professor of Clinical Medicine in the American Colonies**
Elizabeth H. Thomson

625 **The Teaching of Preventive Medicine and Public Health in the School of Medicine, University of Valle, Cali, Colombia**
Santiago Renjifo-Salcedo

638 **Physicians in the United States: Projections 1955–75**
George St. J. Perrott and Maryland Y. Pennell

645 **Teaching Community Resources as a Part of Pediatric Training**
J. Edmund Bradley and Margaret S. Wilson

648 **The Use of Student-conducted Demonstrations in Pharmacology**
William H. Macmillan and Calvin Hanna

655 **The Elementary School in Medical Education**
Arthur H. Parmelee, Jr., and Lonis Liverman

661 **Program of the 69th Annual Meeting**

672 **Abstracts—Annual Meeting of the Association of American Medical Colleges**

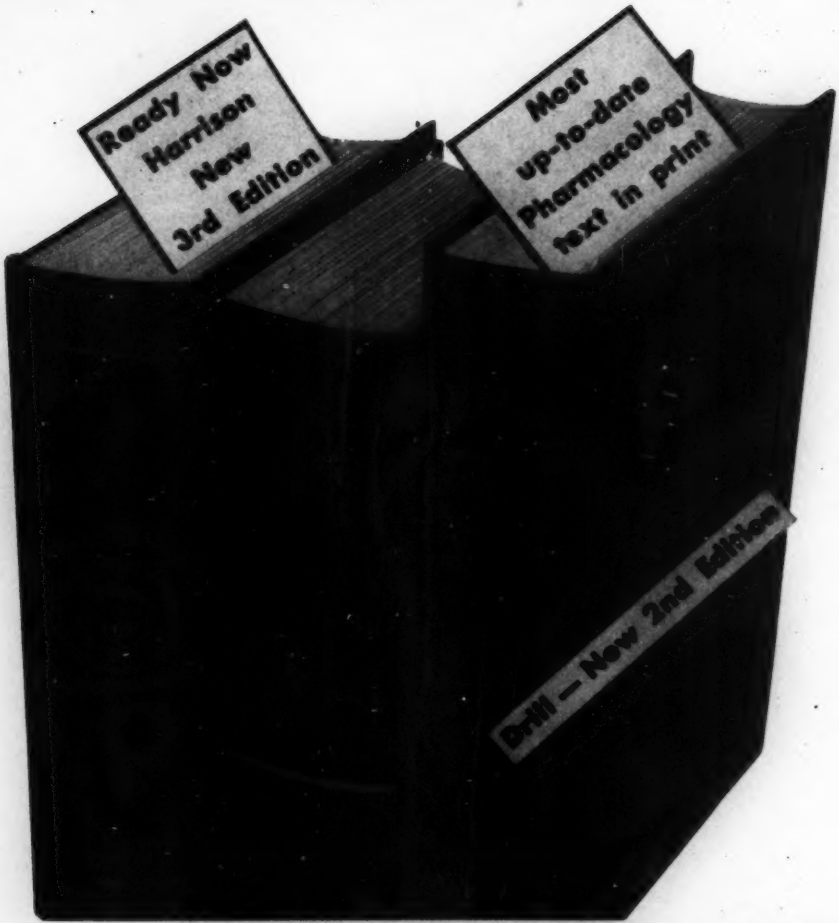
685 **Medical Education Forum—Editorials, Addresses, Comments**

706 **New Books**

xviii **News in Brief**

NEW (7th) EDITION! | **Harrow and Mazur: BIOCHEMISTRY**

See Saunders advertisement just inside ⇨



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News from the Medical Schools: Material for this section should be transmitted to the News Editor, Mr. Tom Coleman, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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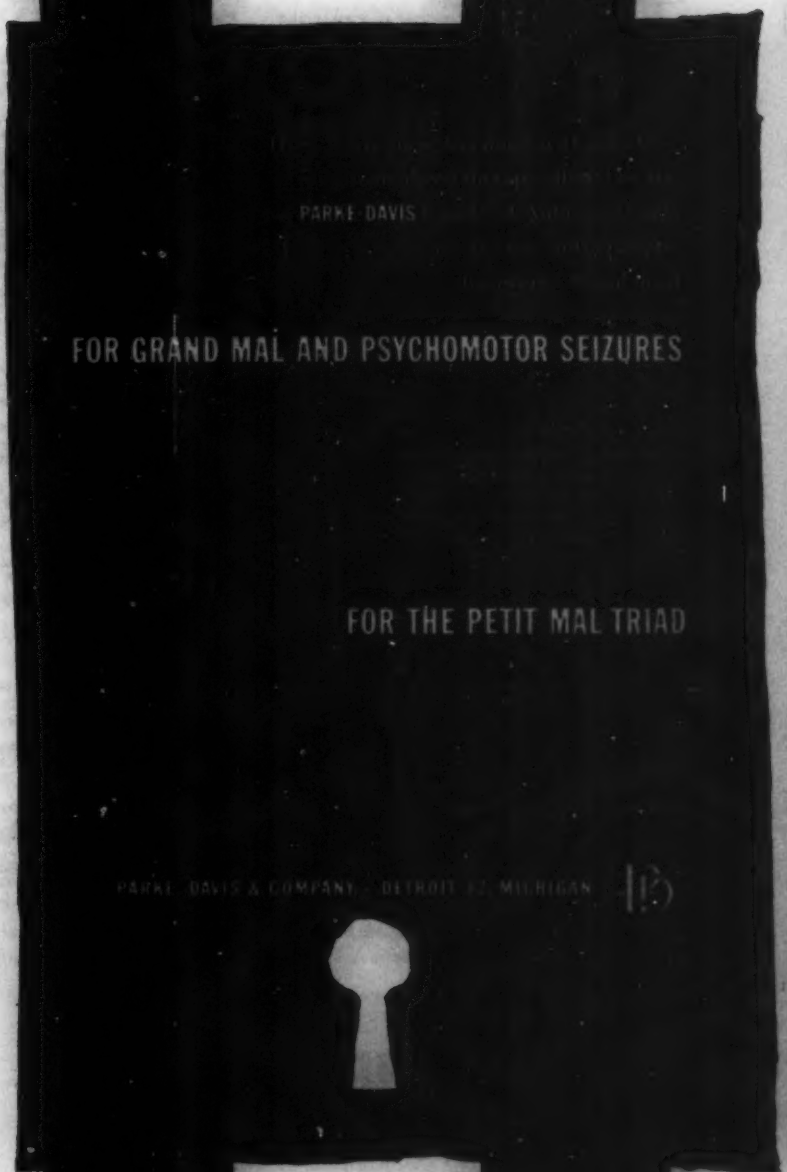

Calendar of Meetings

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Medical School Teaching
Hospital Section, October 10–11

69th Annual Meeting, October 13–15
The Sheraton Hotel, Philadelphia, Pa.

SEPTEMBER

AMERICAN ACADEMY FOR CEREBRAL PALSY, Sheraton-Biltmore Hotel, Providence, R.I., Sept. 25–27. Dr. Raymond R. Rembolt, University Hospitals, Iowa City, Ia., Secretary.

AMERICAN FRACTURE ASSOCIATION, Skirvin Hotel, Oklahoma City, Okla., Sept. 29–Oct. 4. Dr. H. W. Wellmerling, 610 Griesheim Bldg., Bloomington, Ill., Secretary.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Hotel Morrison, Chicago, Sept. 26–27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Shoreham Hotel, Washington, D.C., Sept. 27–Oct. 3. Dr. C. Allen Good, 200, 1st St. S.W., Rochester, Minn., Secretary.

OCTOBER

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AMERICAN CANCER SOCIETY, INC., Biltmore Hotel, New York, N.Y., Oct. 20–21. Dr. Scott Hill, 521 W. 57th St., New York 19, N.Y., Director, Professional Education.

AMERICAN COLLEGE OF SURGEONS, Oct. 6–10. Dr. Michael L. Mason, 40 E. Erie St., Chicago, Secretary.

AMERICAN HEART ASSOCIATION, Fairmont Hotel, San Francisco, Oct. 24–28. Mr. John D. Brundage, 44 E. 23d St., New York 10, Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Kiel Auditorium, St. Louis, Oct. 27–31. Dr. Berwyn F. Mattison, 1790 Broadway, New York 19, Secretary.

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CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Oct. 31–Nov. 1. Dr. Austin S. Weisberger, 2065 Adelbert Rd., Cleveland 6, Secretary.

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ASSOCIATION OF MILITARY SURGEONS OF THE U.S., Hotel Statler, Washington, D.C., Nov. 17–19. Col. Robert E. Bitner, 1726 Eye St., N.W., Washington 6, D.C., Secretary.

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NATIONAL SOCIETY FOR CRIPPLED CHILDREN & ADULTS, Statler Hilton Hotel, Dallas, Tex., Nov. 16–20. Miss Catharine Bauer, 11 S. LaSalle St., Chicago 3, Director of Information.

NEW ENGLAND POSTGRADUATE ASSEMBLY, Statler Hotel, Boston, Nov. 4–6. Mr. Robert S. Boyd, Massachusetts Medical Society, 22 The Fenway, Boston 15, Executive Secretary.

DECEMBER

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AMERICAN MEDICAL ASSOCIATION, CLINICAL MEETING, Hotel Leamington, Minneapolis, Dec. 2–5. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

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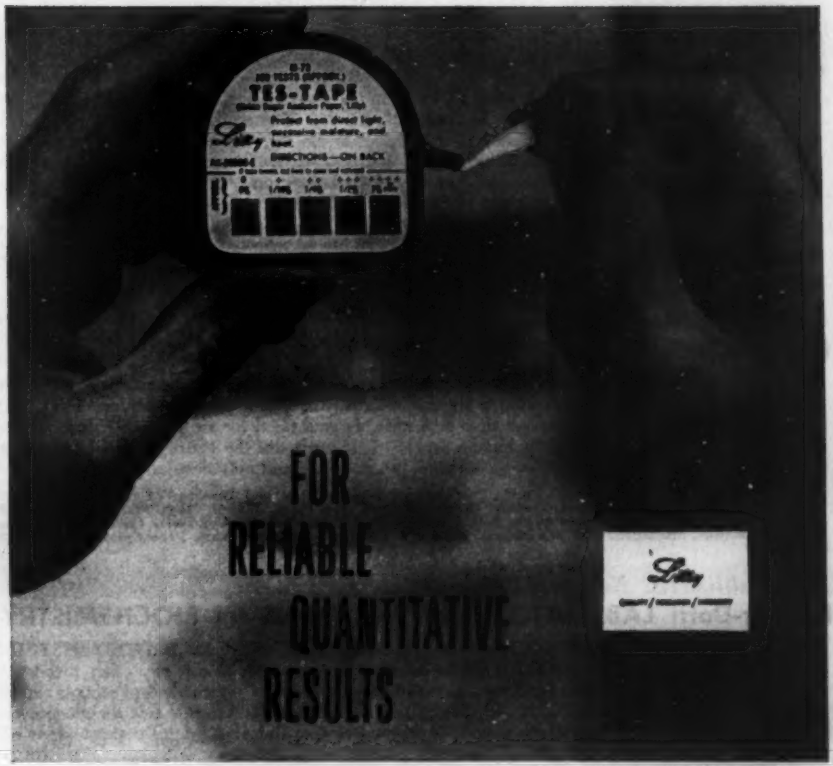

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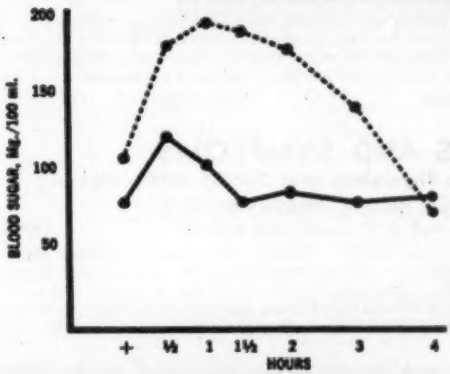

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Foreword

The enthusiastic reception tendered the series of articles on The History of Medical Education, initiated in the February, 1956, number of this journal, led the Editorial Board to plan a series of profiles of eminent men in the development of medical education. Professor V. F. Norwood assumed the responsibility for the series of profiles which is initiated with the following article. The Editorial Board will welcome communications from subscribers on this undertaking.

JOHN Z. BOWERS, *Editor*

Thousands of medical educators have contributed to the achievements and progress of medical education in the United States since its formal institutional beginning in 1765 at the College of Philadelphia. The annals of many schools are studded with the brilliant contributions of competent and dedicated men. The influence of some spread beyond their schools. Before the close of the nineteenth century few American medical educators were known favorably abroad. *The Journal of Medical Education* will present a series of biographies of esteemed medical educators, principally from the nineteenth century. It has been quite impossible to devise a rational formula for selecting the subjects of these historical studies. Some names have been omitted from the list because much has been written about them; some are included because their stories are not well known; others are included because competent authors are specifically interested in their contributions to medical education. Some attention was given to geographic distribution. Although only twelve or thirteen papers are contemplated for this series, it could be continued indefinitely.

V. F. NORWOOD, M.D.

Thomas Bond, 1713–84

First Professor of Clinical Medicine in the American Colonies

ELIZABETH H. THOMSON*
Yale University School of Medicine, New Haven, Conn.

On the evening of the 26th of November, 1766, the managers of the Pennsylvania Hospital forgathered for an unusual meeting. Their regular business sessions were customarily held at one of the local taverns, but on this occasion they had been invited to the house of Dr. Thomas Bond, one of the founders of the hospital, a former manager, and now a physician there. Present in addition to Bond were Drs. Thomas Cadwalader, William Shippen, John Redman, and Cadwalader Evans who, as hospital physicians or leading doctors in the city, had a particular interest in the matter to be presented, for the purpose of this special gathering was to consider the proposal of Dr. Bond that he be allowed to inaugurate a course of clinical lectures in the hospital. Since its establishment 15 years earlier, apprentices had "attended the practice" there of their own preceptors and the regular and attending physicians,[1] but a formal course that would offer regular instruction to the apprentices and the students of the newly founded medical school had not before been envisaged.

Dr. Bond presented his case in the form of a carefully prepared lecture in which he pointed out that the expense of a European education prevented some of the best qualified young men from going abroad and then made the sensible observation that no country "can be so proper for the instruction of Youth in the Knowledge of Physic, as that [in] which 'tis to be practised; . . . ," since climate and other factors could alter the symptoms and severity of diseases. He went on to the contention that no matter how thoroughly the Professor of the Theory and Practice of Physic might instruct his pupils, "yet there is something further wanting, he [the student] must join Examples with Study, before he can be sufficiently qualified to prescribe for the Sick; for Language and Books alone, can never give him Adequate Ideas of Diseases, and the best methods of Treating them.[2] For which reasons Infirmaries are Justly reputed the Grand Theatres of Medical Knowledge. . . ."[3]

He amplified this statement with views so far in advance of his time that Abraham Flexner a century and a half later observed in his classic study of *Medical Education in the United States and Canada* (1910; p. 4)

* Research Associate, Department of the History of Medicine, Yale University.

[1] See the certificate issued to Samuel Treat by Dr. John Redman and others in Stephen Wickes's *History of Medicine in New Jersey, and of Its Medical Men, from the Settlement of the Province to A.D. 1800*, Newark, 1879, Appendix E, p. 102. Also cited in W. F. Norwood's *Medical Education in the United States before the Civil War*, Philadelphia, 1944 (p. 35), an invaluable text for the study of medical education in the period covered.

[2] William Osler in "Books and Men" (*Boston M. Surg. J.*, 144:60–61, 1901) wrote: "To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."

[3] Bond's lecture has been printed several times; I have used the version in Thomas G. Morton's *The History of the Pennsylvania Hospital 1751–1895*, Philadelphia, 1895, pp. 462–67.

that his words still warranted repetition. At the close of Bond's remarks the enthusiasm was such that the managers moved that the entire lecture be spread upon the minutes and that he commence his course immediately. With its rereading on December 3d before the students at the Pennsylvania Hospital, the first clinical course in medicine in the Colonies was begun.

Over 150 years after Thomas Bond had set forth the great advantages to the student and his future patients of teaching at the bedside, Dr. Harvey Cushing in his biography of William Osler gave credit to Osler for making it possible for students to work on the wards.[4] However, if Thomas Bond's earlier and most successful instruction at the bedside had been forgotten and the practice had lapsed, it was only another manifestation of a recurring pattern, for the custom of teaching at the bedside of the sick, advocated by Hippocrates, had come and gone through the centuries. It had been revived by Montanus at Padua in the sixteenth century, was abandoned, and was then re-introduced by Bottoni and degli Oddie late in the century. Although again allowed to lapse at Padua, it had been carried by two Dutch doctors who had studied there to Leyden. Here Sylvius and later Boerhaave continued the practice, and through their students it was instituted at Edinburgh whence it had spread to other schools and hospitals.

Thomas Bond did not study at Leyden and probably not at Edinburgh, but he undoubtedly had ample opportunity in London and Paris to observe the advantages of bedside teaching. The details concerning his *circa* 15 months in Europe are scanty, as they are about several other periods of his life. In fact, it is surprising that so little material about him and his work has survived, since he played an important role in the founding of the American Philosophical Society (1743), the Academy in Philadelphia (1749), the Pennsylvania Hospital (1751), and the first medical library in America (1763), as well as inaugurating clinical instruction (1766)—achievements which made him stand out among the many distinguished physicians of his time as an enlightened citizen with vision and uncommon sense and wisdom. And despite his close association with Benjamin Franklin whose records are legion, only a few letters document the long years of their warm friendship.

It is usually said that Bond was born in Calvert County, Maryland, in 1712, this date probably having been adopted because his tombstone records that he died in 1784, aged 72. However, the records (now in Baltimore) of the Friends Meeting in Herring Creek to which his father and mother belonged give his date of birth as May 2, 1713. It was to this meeting that he applied, as is required of a Quaker, for a statement as to his eligibility for marriage after he had moved to Philadelphia and wished to marry the Mayor's daughter in 1735. Although it is said that Bond studied medicine with Alexander Hamilton, this cannot have been, since Hamilton was born in 1712 and did not receive his own medical degree until 1737 in Edinburgh. It is more probable that Bond went to Philadelphia around 1730, for it would be natural for a young man wishing to study medicine to look toward that prosperous and growing city where there were physicians who had emigrated from England. However, wherever he acquired his preliminary medical knowledge, it must have been through the apprentice system, since this was the only means available at that time of securing an education in medicine. There were no schools, and until 1718 no one from the Colonies had made the long and dangerous voyage to Europe to study medicine. However, John Kearsley, Sr., who had emigrated to Philadelphia in 1711 after an excellent education in London, was apparently urging those who attended his lectures to broaden their studies, for Lloyd Zachary went abroad in 1723 and Thomas Cad-

[4] Osler himself discussed Bond's first clinical lecture in "Occasional Notes on American Medical Classics," a paper read before the Johns Hopkins Hospital Historical Society and published in *Univ. [of Pennsylvania] med. Mag.*, 9:1–4, 1897.

walader soon followed in 1726 or 1727. Although Thomas Bond did not cross the Atlantic until 1738, he was still among the first half dozen Americans who sought further opportunities in the Old World.

When he set forth in the early summer of 1738 with a box of turtle eggs, a package of roots, and a jar of papaw flowers and fruit in addition to his own luggage, he was 25, already established as a physician in the city and already a widower, and he was described in a letter he bore from one of the Proprietors, Thomas Penn, to Silvanus Bevan, owner of an apothecary shop in London, as "a person of very good character."[5]

This and other letters he carried indicated that he had acquired good friends as rapidly as he had apparently acquired his medical training. Benjamin Franklin was certainly one of his earliest friends. Bond became a member of Franklin's Junto, and in 1734, 3 years after Franklin himself was initiated, he was taken into St. John's Lodge, one of the first Freemason groups in this country which had been founded but a few years earlier. Another good friend was his fellow Quaker, John Bartram, who had aroused his interest in botany. It was for Bartram that he carried to London the turtle eggs, papaw flowers, etc., to Peter Collinson, the eminent Quaker merchant and botanist who served as a sort of London clearinghouse for Americans. He introduced Quakers to other Quakers, physicians to other physicians, and anyone interested in science to whoever in Europe had a similar interest. The eighteenth-century world was a small world, and all who were endeavouring to learn more of its physical secrets either for practical purposes or in the pursuit of pure knowledge, whether in England, on the Continent, or in the Colonies, corresponded with one another with unflagging interest and eager enthusiasm, exchanging information, seeds, plants, inventions, books, and ideas freely and with generosity.

[5] Thomas Penn to Silvanus Bevan, Philadelphia, August 16, 1738, Historical Society of Pennsylvania.

Bond also carried an order for books for the Library Company to Collinson from Joseph Breintnall, a Quaker merchant and fellow member of the Junto, who in his accompanying letter called Bond "my intimate friend" who could, provided he were asked, give a surprising account of a new "Phaenomenon, of a Dog's breeding Snakes in his Liver after having been bit by snakes and recovered."[6]

The only hint of Bond's activities in London is to be found in a letter from young John Fothergill, who was just his age and who had been graduated from Edinburgh 2 years earlier (1736). Fothergill had begun practice in London and begun, also, his innumerable acts of kindness and generosity to all who came from Philadelphia. Like Collinson he became the friend and adviser of many Americans, whether traveling or pursuing medical or scientific studies at home. Fothergill wrote in August of 1738 to Israel Pemberton: "I have had some of Dr. Bond's company, he is an intelligent person and has made considerable advances in the knowledge of his business. He intends I believe to leave England pretty soon; it has not been in my power to do him any considerable service; tho' would readily do both on thine and his own account. . . ."[7]

One of the few surviving Bond letters gives the only account there is of his sojourn in Paris. It was written to his friend John Bartram on February 20, 1738/9, and tells of his great pleasure in meeting, through Peter Collinson, Dr. Bernard Jussieu, "Professor of Botany at the King's Garden who is supposed to be one of the Greatest men in that way in Europe." He then continued: "I have now spent three months in Paris the most dilligently I ever did any [in] my life and I fear at the Prejudice of my tender Constitution, but if I was almost sure 'twould kill me I could not avoid tending the Curious Courses of Anatomy, Surgery, Midwifery, Physiology &c and in short 'tis

[6] Minutes, Library Company of Philadelphia, Vol. I, p. 79.

[7] John Fothergill to Israel Pemberton, London, August 20, 1738, Gilbert Collection, Library of the College of Physicians of Philadelphia.

impossible there can be better if so good schools in the world. My Friend Jussieu tells me that I shall believe myself at home by being amongst so many of my native Plants as brought from America by himself, in quest whereof he was sent by the King. If I am not otherways too busy I propose by his assistance to improve myself in that Science, at the King's Garden which is a most beautiful Place. . . ."[8]

At the Royal Garden, too, he met François Hunauld, who was Professor of Anatomy there, and the Danish surgeon, J. B. Winslow, who taught both anatomy and surgery. The latter's great work, *Exposition anatomique de la structure du corps humain*, had first appeared a few years earlier (1732). Bond's other friends, according to a letter he wrote many years later to Franklin,[9] were Jean Astruc, a professor at the Royal College and renowned teacher, Antoine Ferrein, who was ultimately to succeed Winslow as Professor of Anatomy and Surgery at the Royal Garden, and Claude Nicholas Le Cat, who was Surgeon-in-Chief at the Hôtel-Dieu.

Although Bond's studies at the Hôtel-Dieu did not lead to a degree and he received none from any European institution to our knowledge, he profited greatly from his exposure to the opportunities offered in the Old World, and the broad and enlightened views he brought to the practice of medicine throughout his life undoubtedly stemmed in large part from this early contact with the great figures in medicine and science of England and France. Despite the tender constitution mentioned in his letter to Bartram, and subsequently at intervals by his contemporaries, he lived to the age of 71 and brought great distinction to his adopted city to which he now returned in November of 1739.

[8] Bond to John Bartram, Paris, February 20, 1738/9, Library of the College of Physicians of Philadelphia. This letter is printed in William Darlington's *Memorials of John Bartram and Humphry Marshall*, pp. 316–17. Philadelphia, 1849.

[9] Bond to Franklin, July 6, 1771, American Philosophical Society Library. This letter is printed in William Pepper's *The Medical Side of Benjamin Franklin*, pp. 53–54, Philadelphia, 1911.

Philadelphia, at this time, was a city of some 15,000, second only to Boston in population, in prosperity, and in urbanity. Its growing commerce brought people and cultures from many parts of the world, and the comfortable circumstances of the population in general made the city a fertile ground for progress in science, education, and the arts. Many of its physicians were not only leaders in their profession but in the civic and educational affairs of the city as well. Thomas Bond again took his place among them and soon had a practice which included a large proportion of the "first" families of Philadelphia. He also, like most physicians, had many charity patients; and very shortly he began his long service to the community which would have been a formidable burden for any busy man—but was remarkable for one supposedly of frail health with a predisposition to consumption.[10] To conserve his strength, Bond made his calls in a chaise when other physicians went on foot or occasionally, like the elder Shippen, on horseback.

Several significant events occurred in the next decade. In 1741 he became a member of the Library Company of Philadelphia. This, the first subscription library in the Colonies, was organized by Franklin in 1731 with members of the Junto as the nucleus of the initial subscribers. Mr. Edwin Wolf, the present Librarian, in an interesting analysis of the early holdings, has written: "Medical works formed the largest single specialized group within the general field of science. . . . Certainly, in this category the influence of the Philadelphia doctors Thomas Bond and Thomas Cadwalader, both early members of the library, was strongly felt."[11]

In 1741 also, Bond and Lloyd Zachary assumed Thomas Graeme's job of inspecting for contagious diseases all ships arriving in the harbor. In 1743 his younger brother Phineas Bond returned from study in Europe with a degree from the University

[10] Thacher (*American Medical Biography* . . . , Boston, 1828) is the first to attribute Bond's frail health to "consumption."

[11] "Franklin and His Friends Choose Their Books." *Penn. Mag. Hist. Biog.*, 80:11–36, 1956 [p. 27].

of Rheims, and they entered into a partnership which lasted until Phineas died in 1773. In the same year he, Phineas, John Bartram, and others joined Benjamin Franklin in the formation of the American Philosophical Society. In 1749 he again joined Franklin, this time in establishing an Academy in Philadelphia, which was later to become the College of Philadelphia (1753) and ultimately the University of Pennsylvania (1779). At this time Harvard College had long been established in Massachusetts, Yale in Connecticut, William and Mary in Virginia, and the College of New Jersey (later Princeton) had been recently founded in New Jersey. Franklin felt that Pennsylvania should also have a college, so he first appealed to a number of his friends in the Junto for support, then wrote and published a pamphlet entitled "Proposals Relating to the Education of Youth in Pennsylvania," and next undertook a subscription by which some £5,000 were raised. A board of 24 trustees was formed, and, after electing Franklin President in November of 1749, they subsequently hired a house, engaged teachers, and the Academy was opened.

Thomas Bond was a Trustee of the institution until his death, and through the years gave a great deal of time and attention to its affairs, often no doubt at a considerable sacrifice. He served as Treasurer and on numerous committees—to select teachers, to examine students, to arrange for commencements, to explore the protocol for signing diplomas, to inquire into the state of the medical school after the Revolution, to consider what sum should be paid for tuition, etc.[12] Through his loyal service on these committees and his temperate judgment and wise counsel in College affairs, he wielded no little influence in the education of the young Philadelphians who attended the school during the 35 years of his trusteeship.

Bond's next service was the foundation of a hospital. In his extensive practice and in his work with Zachary as health inspector of the port, he had become acutely aware of the need for a place where the sick, both transient and native, and especially the insane, might be cared for by trained people. The Philadelphia Almshouse, established in 1731, arranged for those of its inmates who were ill, but it was not an institution primarily for the sick. Franklin had always found Bond an enthusiastic and influential collaborator in his many schemes for the good of the city, but on this occasion it was Bond who sought the assistance of Franklin. The much-quoted passage from the latter's *Autobiography* follows:

> In 1751, Dr. Thomas Bond, a particular friend of mine, conceived the idea of establishing a hospital in Philadelphia (a very beneficent design, which has been ascribed to me, but was originally and truly his), for the reception and cure of poor sick persons, whether inhabitants of the province or strangers. He was zealous and active in endeavoring to procure subscriptions for it; but the proposal being a novelty in America, and at first not well understood, he met with but small success. At length he came to me with the compliment, that he found there was no such thing as carrying a public-spirited project through without my being concerned in it. . . . I inquired into the nature and utility of his scheme, and receiving a very satisfactory explanation, I not only subscribed to it myself, but engaged heartily in the design of procuring subscriptions from others. . . .[13]

Nowhere is Franklin's understanding of human nature more evident than in his course of action in this project. First, he "prepared the minds of the people by writing on the subject in the newspapers," which, he said, was his usual custom in such cases. However, when the largesse of those with civic pride ran out, and he began to meet the reluctance of citizens who could not envisage any practical service to the community of such an institution, he saw that outside assistance would be needed, so he phrased a petition to be presented to the

[12] Pennsylvania University Papers, 1753–1791, Vol. I; also Minutes of the Academy and College, Vols. I–III.

[13] There are many good accounts of the founding of the Pennsylvania Hospital. In addition to Morton (*op. cit.*, note 3), I have used Francis R. Packard's *Some Account of the Pennsylvania Hospital from Its First Rise to the Beginning of the Year 1938*, Philadelphia, 1938, and the facsimile edition of Franklin's *Some Account of the Pennsylvania Hospital* with an introduction by I. Bernard Cohen, "Publications of the Institute of the History of Medicine," Johns Hopkins University, Fourth Series, Vol. VI, Baltimore, 1954.

House of Representatives of the Province asking for £2,000, provided he could obtain an equal amount through voluntary donations. The Assembly, believing the latter impossible and seeing that "they might have the credit of being charitable without the expense, agreed to its passage." This promise secured, Franklin went back to the people and "urged the conditional promise of the law as an additional motive to give, since every man's donation would be doubled; so the clause worked both ways. . . ."

The subscriptions soon exceeded the amount required, and on July 1 a majority of the contributors met at the State House and elected twelve managers and a treasurer. The latter met the next day at the Widow Pratt's Royal Standard Tavern to consider the matter of a site for the erection of the hospital. Since applying to the Proprietors (then in England) for land for a suitable building lot would occupy some time and since it was felt much good might be done in the meantime for the sick of the city, it was agreed that a building should be rented, and the house of the late Judge John Kinsey, which was surrounded by gardens and a pasture, was duly secured.

The twelve managers and treasurer met on several subsequent occasions that summer and autumn to forward the plans for the Hospital. Bond and Franklin were appointed to prepare a seal for the corporation; Bond and Israel Pemberton, another of the managers, were charged with securing a matron; Bond was concerned with the matter of securing the site and erecting the permanent building; and he, Benjamin Franklin, Joshua Crosby, the president, and Hugh Roberts were appointed a committee to draft a set of laws and rules for the managers.

In October, Thomas and Phineas Bond and Lloyd Zachary were elected Physicians to the Hospital, with Drs. Thomas Graeme, Thomas Cadwalader, Samuel Preston Moore, and John Redman being appointed "to assist in consultations on extraordinary cases." When the petition to the Assembly for funds to found the hospital had hung in the balance because the Members feared the cost of securing physicians and surgeons would consume most of the money raised, Dr. Zachary and the two Bonds had volunteered to serve the Hospital for 3 years without recompense and to supply all medicines during that interval at their own expense. This act of generosity silenced the objections, and it also set an example which has been followed by all attending physicians to the present day. The Hospital received its first patients in February of 1752, and it must have given Thomas Bond considerable satisfaction to see his vision of an institution for the adequate care of the sick and lunatic thus become a reality. He resigned from the Board of Managers after a year, since he had been appointed a Physician, but his service to the hospital in the latter capacity, which eventually amounted to 35 years and 5 months, was exceeded by that of only one other, Dr. Thomas Parke, in the first 144 years of its existence.

As soon as the hospital opened its doors, students began to receive instruction there. These were usually apprentices of the physicians and attending physicians, but "pupils of the Hospital" were also admitted to the wards. It was Thomas Bond who drew up the certificate which was given to such students when they had completed a term of attendance, and the copy in his handwriting is preserved in the Hospital Library.[14] Although several physicians of the hospital other than the student's preceptor might have a part in his training, the instruction was on an individual basis, and there were no classes until later.

In 1762 Dr. John Fothergill sent a book to the hospital "for the Benefitt of the Young Students in Physic." Less than a year later the Medical Staff informed the managers that, since it was the custom in many hospitals in Great Britain for gratuities from students to accrue to the attending physicians, they felt they had the right to appropriate these fees for the founding of a

[14] This has been printed in Morton, *op. cit.* (note 3), p. 470.

medical library in the Hospital which they judged would "tend greatly to the Advantage of the Pupils and the honor of the Institution." This proposal was signed by Thomas and Phineas Bond, Thomas Cadwalader, and Cadwalader Evans, one of Bond's earliest pupils. Their generosity and that of subsequent members of the medical staff was followed by other gifts—the libraries of Lloyd Zachary and Benjamin Morris after their deaths, books to the value of a hundred pounds from William Strahan, the London bookseller who filled many orders from the Colonies, and many, which greatly increased the importance of the growing collection, from John Coakley Lettsom who had continued Fothergill's acts of friendship and who served for a number of years as adviser in the purchase of books for the library.[14]

In 1765, through the efforts of John Morgan and William Shippen, Jr., a medical school was established in connection with the college.[15] After a preliminary education and apprenticeship in Philadelphia, both Morgan and Shippen had studied abroad and received degrees from the University of Edinburgh. Here they had talked of founding a medical school in Philadelphia, and they later discussed the matter with John Fothergill. Shippen returned first and in 1762 began lectures in anatomy which represented the initial effort towards establishing medical teaching on a systematic basis. His lectures were enhanced by the handsome gift from Fothergill of seven cases of anatomical drawings and plaster casts representing different parts of the body. Since these drawings were the work of the great Dutch painter Van Rymsdyk, who had made most of the drawings for William Hunter's magnificent *Gravid Uterus* and since they had cost Fothergill 200 guineas, one can estimate the true extent of his interest in encouraging education in Philadelphia. The drawings are still one of the treasured possessions of the Hospital.

Morgan returned in 1765, having spent 5 years in study and travel, accumulating both knowledge and academic and scientific distinctions. Very shortly he secured an appointment as Professor of the Theory and Practice of Medicine in the college, and at the end of May delivered at Commencement his now celebrated *Discourse on the Institution of Medical Schools in America*.[17] This remarkable and forward-looking document became the basis on which the school of medicine was organized. Lectures were begun in the autumn of 1765, and in 1768 ten students received the first degrees in medicine granted in America.

Dr. Bond proposed and began clinical instruction in 1766. In his classes were both students in the school of medicine and some apprentices of attending physicians who were not enrolled in the school. In the aforementioned opening lecture he had indicated that the clinical professor should meet his students at stated times in the Hospital, that he should ask questions about the disease being presented in an exact and particular manner so that the students might see how many and what minute circumstances were necessary to form a judgment, that he should then pronounce what the disease was, whether it was curable or incurable, and how it should be treated, supporting his reasons by authority or experience. And if he should be wrong about the diagnosis and the patient should die, then he should open the body, find the true cause of death, and acknowledge his mistake, for only in this way could a sure knowledge of medicine be obtained and costly mistakes in the future be avoided. Since the first scientific autopsy in this country was supposedly performed by Dr. Thomas Cadwalader in 1742 and there had been only a few in the intervening 20 years, it can readily be seen that the proposal to

[14] Dr. Packard (*op. cit.*, note 13) stated that the library contains fifteen medical incunabula, is particularly rich in old herbals and works on natural history, and contains a second edition of Vesalius' *Fabrica* (1556) and the Amsterdam (1648) edition of Harvey's *De motu cordis*, etc.

[15] Details will be found in Joseph Carson's *A History of the Medical Department of the University of Pennsylvania from Its Foundation in 1765*. Philadelphia, 1869.

[17] A facsimile of this classic was published in 1937 with an introduction by Abraham Flexner in the "Publications of the Institute of the History of Medicine," Johns Hopkins University, Fourth Series, Vol. II.

submit terminal cases to autopsy was a revolutionary one. Bond had apparently performed two autopsies the preceding autumn, and he asked his audience whether anything short of the evidence of their own eyes could have revealed the true cause of death in these cases. Autopsies would have the further advantage, he said, "of rousing in you an industrious pursuit after the most hidden causes of all the Affections of the Human Body; and convince you what injury they do to the living, who oppose a decent, painless, and well timed examination of the Dead."

The last part of his lecture indicated his strong interest in epidemiology. He urged further investigation of the causes of epidemics, lauded the city fathers for paving the streets and ridding them of filth and for razing the public dock so that it was no longer a hazard to the public health. He insisted on the segregation of those suffering from contagious diseases and on the importance of the cleanliness of bedding and clothing. Above all he urged that daily observations of the weather be faithfully made with the meteorological apparatus which he was presenting to the hospital, because he felt the variations in diseases, the time of their appearance in the city, and their severity could be correlated with climate. These observations were kept in the Hospital until the early years of the twentieth century. Dr. Francis Packard observed that they were "the oldest continuous records of this kind and were frequently appealed to in legal and other matters to decide disputes about the weather conditions on certain days."[18]

The managers had decided that these clinical lectures would be of such value to the students that they should pay an additional guinea for the privilege of attending them. Some years later a number of students submitted a petition to the Trustees asking that attendance at Dr. Bond's lectures be no longer a requirement for their degrees, partly because of the expense. However, the lectures were considered of such importance that they were continued, and there is evidence that the students on the whole were well pleased. One wrote "Intolerable" on the back of his course card the first year, but there were others who dedicated their theses to Bond. One of these, the thesis of Jonathan Elmer dated 1768, bore the dedication, "To the celebrated and learned Dr. Thos. Bond" and in it Elmer wrote: ". . . the many useful observations you daily make in your course of clinical lectures are sufficient proof of your medical skill and judgment. . . ."[19]

Dr. Bond himself made a comment on the effectiveness of his lectures in a letter to Franklin in 1771. He said that one of the theses that year had mentioned "the extraordinary Success of my Method in the Cure of Dropsies in the Pennsylvania Hospital, . . . but the Facts are there so badly chosen, and the Principles so much mistaken, that I cannot patronise it. This," he added wryly, "will lay me under the disagreeable Necessity of revising my Notes on that Subject."[20]

But there could not have been many who failed thus under Bond's tutelage, for his reputation spread afar, and this letter of Dr. Charles Wiesenthal, a leading physician of Baltimore, to his son Andrew, who was studying medicine in Philadelphia in 1781–82, is typical of contemporary opinion: "I am glad you have introduc'd yourself to Doctor Bond, though he may have some Oddities, you may nevertheless rely on this that his Acquaintance will be valuable to you both his Learning and Experience are unquestionable, and he moreover is very communicative and takes a Delight in instructing young Persons and that in proportion to their Diligence and Application you will therefore visit his Lectures frequently and freely apply to him to resolve Such things as may be obscure to you, he is

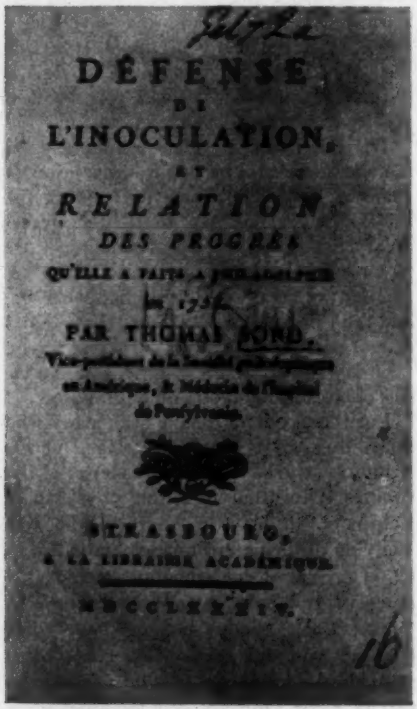
[18] *Op. cit.* (note 9), p. 32.

[19] This thesis, or essay, was submitted at the time Elmer received his Bachelor's degree in medicine. When the necessary 3 years had passed and he had submitted the required thesis for his doctorate in 1771, he dedicated it to Franklin.

[20] Cited in note 9.

a good Surgeon besides and may give you Some good hints in the Hospital."[21]

This estimate of Bond as a teacher could be matched by others attesting to his skill both as a physician and surgeon—the chief factor, of course, in his success in instructing students. People came from some distance to consult him, for he was said to


DÉFENSE
DE
L'INOCULATION,
AVEC
RELATION
DES PROGRÈS
QU'ELLE A FAITS A PHILADELPHIE
en 1756
PAR THOMAS BOND,
Vice-président de la Société philosophique
en Amérique, & Médecin de l'Hospital
de Pensylvanie.
STRASBOURG,
& LA LIBRAIRIE ACADÉMIQUE.
M. DCC. LVII.

Reproduced through the courtesy of the British Museum

FIG. 1.—Title-page of Bond's little-known treatise on inoculation.

possess "an intrepidity in the undertaking [of] difficult cases, accompanied by uncommon success in execution."[22] Dr. Francis Packard has written: "Of the three members of the first staff of the Hospital, Dr. Thomas Bond was a truly remarkable surgeon. He was especially skilful in operating for stone in the bladder, a much more frequent complaint in those days than it is now. There are many entries [in the Hospital records] of such operations performed by him, quite a few on young children."[23] Bond also performed amputations, opened breasts, extirpated tumors, etc.

Though baths were little employed in the treatment of disease at that time, Bond prescribed both hot and cold baths and also vapor and warm air baths and established their use at the Pennsylvania Hospital. He was one of the first physicians to practice inoculation and was a firm advocate of its advantages all his life. Bond also devised several surgical appliances, one known as the Bond splint which is still employed to some extent for the treatment of fractures at the lower end of the radius. Another invention was an instrument for the removal of foreign bodies from the esophagus. Benjamin Rush credited him with the introduction of mercury in Philadelphia and with success in its use. Rush, in his *Medical Inquiries and Observations upon the Diseases of the Mind*, also speaks of his interest in the care of the insane, an interest obvious in the number of these patients which came into the Hospital under his care.

Bond made several contributions to the slowly growing medical literature of the eighteenth century. He sent two papers to *Medical Enquiries and Observations*, published in London by "A Society of Physicians." These were entitled "An Account of a Worm Bred in the Liver," (Vol. 1, 1757) and "On the Use of the Bark in Scrofulous Cases" (Vol. 2, 1764). During his years as Vice-President of the American Philosophical Society (which after having lapsed was revived and joined with another, similar society in 1769), he communicated a number of papers, usually of a medical nature, although few of these were published. In 1779 his paper on "The Means of Pursuing Health and Preventing Disease" showed

[21] The letter is printed by E. F. Cordell in "Charles Frederick Wiesenthal, Medicinae Practicus, the Father of the Medical Profession of Baltimore." *Bull. Johns Hopkins Hosp.*, 11:170–74, 1900 [p. 172].

[22] *Pennsylvania Gazette*, April 3, 1784.

[23] *Op. cit.* (note 13), p. 35. In performing the operation of lithotomy Bond preceded John Jones, who is often given the credit; but Jones did perform the first operation in New York.

his continued interest in preventive medicine. Two years before his death he gave the Annual Oration of the Society at the State House and chose as his subject, "The Rank and Dignity of Man in the Scale of Being." In the year of his death (1784) there was published in Strasbourg an 18-page treatise entitled *Défense de l'Inoculation, et Relation des Progrès Qu'elle a Faits à Philadelphie en 1758* (Fig. 1), of which only one copy has been located of the French and one of the later German edition (1787).[34]

During the years that Bond was acquiring has reputation in medicine and participating in so many allied activities, he had also helped to raise a large family who took an active part in the social life of Philadelphia. Three years after his return from Europe in 1739 he had been disowned by the Quakers for "disunity with Friends." The page in the minutes of the Meeting where the charge against him was to be copied is unfortunately blank. It may have been that his "crime" was marrying outside the Meeting, for probably about this time he married Sarah Venables whose brother was a prominent member of Christ Church to which Bond now transferred his own membership. Seven children were born to them—five sons and two daughters—but a daughter and a son died in infancy, and their son Richard, his father's favorite, who was studying medicine and who showed great promise after an earlier tendency to "fast living," died of consumption in 1772 when he was only 22. Their eldest son, Thomas Jr., became a physician, and father and son performed loyal service to their country during the Revolutionary War. Their youngest son, Venables, also studied medicine, but he was only 19 when his father died.

In 1784, when Thomas Bond was 71, he could look back over a full life. He had played a large part in four great contributions to medical education—the establishment of a college, of the first hospital, the first medical library, and the first clinical lectures. He had served the Library Company of Philadelphia faithfully, and his long and vital relationship to the American Philosophical Society was one of the principal factors in keeping it active during the years Franklin, the president, was abroad. In a generation of outstanding men, both in medicine and public affairs, Thomas Bond was a leader. Although Franklin stood far above his contemporaries, the atmosphere he created in Philadelphia was one of growth and progress which encouraged the development of many talents. Bond worked beside him in many public-spirited ventures,

Courtesy of the Library of the College of Physicians of Philadelphia

FIG. 2.—Photograph of a miniature, the only known likeness of Thomas Bond.

but it was to his own profession that he gave his most devoted service.

In an age of drastic medical treatment, he counseled moderation and common sense. He was not content to be a skillful surgeon, a successful physician, but was untiring in his efforts to advance medicine and the conditions under which it was practiced. He urged "dilligent investigation" of the causes of disease and the effect of climate on its manifestations. He advocated consideration of the environment of sick people and em-

[34] There is a copy of the French edition in the British Museum; a copy of the German edition (Nürnberg) can be found in the National Library of Medicine.

phasized the preventive aspects of medicine. He continually held up high standards and cultivated a spirit of inquiry among his students. The measure of the man may be had from a sentence in his opening clinical lecture: ". . . and if the Disease baffles the power of Art, and the Patient falls a Sacrifice to it, he then brings his knowledge to the Test, and fixes Honour or discredit on his Reputation by exposing all the Morbid parts to View, and Demonstrates by what means it produced Death; and if perchance he finds something unsuspected, which betrays an Error in Judgment, he like a great and good Man, immediately acknowledges the mistake, and, for the benefit of survivors, points out other methods by which it might have been more happily Treated. . . ."

Thomas Bond died on the 26th of March, 1784. The cause of his death is unknown, but his obituary suggests overwork at his advanced age, for he was active in his practice and teaching at the hospital until a few weeks before a brief final illness. He was well-to-do and could have retired, but it was consistent for him to continue to work as long as he could. He thus earned the esteem and affection of his fellow Philadelphians, and it was recorded in the *Pennsylvania Gazette*[35] that "On Sunday his remains were interred in Christ Church burial ground, with such an attendance of his fellow citizens, as was due to the memory of a gentleman, who had gone through life inoffensively to all men; with good humour and kindness to the whole circle of his acquaintance, and with fidelity and affection to his friends."

[35] April 3, 1784.

The Teaching of Preventive Medicine and Public Health in the School of Medicine, University of Valle Cali, Colombia

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The teaching of preventive medicine in the School of Medicine of Cali is being done gradually from the very beginning of the study of medicine. For the best coordination, there exists a Department of Preventive Medicine and Public Health that unites the various sections, each one with a full-time director and a sufficient number of professors and scientific personnel for the necessary teaching and research. A Health Center functions that permits direct action and control over the community chosen for the development of the plan.

The Department of Preventive Medicine and Public Health is one of nine departments in the School of Medicine. It was established at the time the School was founded in 1950. Since 1955, it has functioned cooperatively between the Universidad del Valle and the Rockefeller Foundation.

There is complete coordination with the other eight departments of the school. The head of the Department of Preventive Medicine and Public Health is a member of the directive council of the faculty and therefore has the necessary information on the problems of medical education and the administrative progress of the entire faculty.

The department has the responsibility of teaching different subjects during the several years of the medical curriculum, as follows and as seen in Chart 1 and Table 1.

* Head of the Department of Preventive Medicine and Public Health.

THE PROGRAM

First Year

General ecology as the base for epidemiology. In this course the following aspects are treated: significance of ecology, the environment, origin of the groups and the relations of organisms of the same species, relation of the species within themselves (symbiosis, mutualism, parasitism, predation), the community, and dynamics of the ecosystem.

Applied mathematics with the object of making a general revision of mathematics knowledge necessary for a better understanding of the subjects such as biophysics, statistical methods, biostatistics, pharmacology, etc.

Second Year

Microbiology in order to teach:

1. The nature and distinctive characteristics of the microorganisms, especially the pathogenics.
2. The role of microbes in pathogenesis, observing this question from a general biological viewpoint that facilitates the understanding of principles alluded to in the following paragraph.
3. How these organisms persist and propagate themselves, connecting the ecological aspect with that of epidemiology.
4. What the clinician can do in the bacteriological laboratory with the correct

University of Valle - School of Medicine
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
HOURS
1967-68

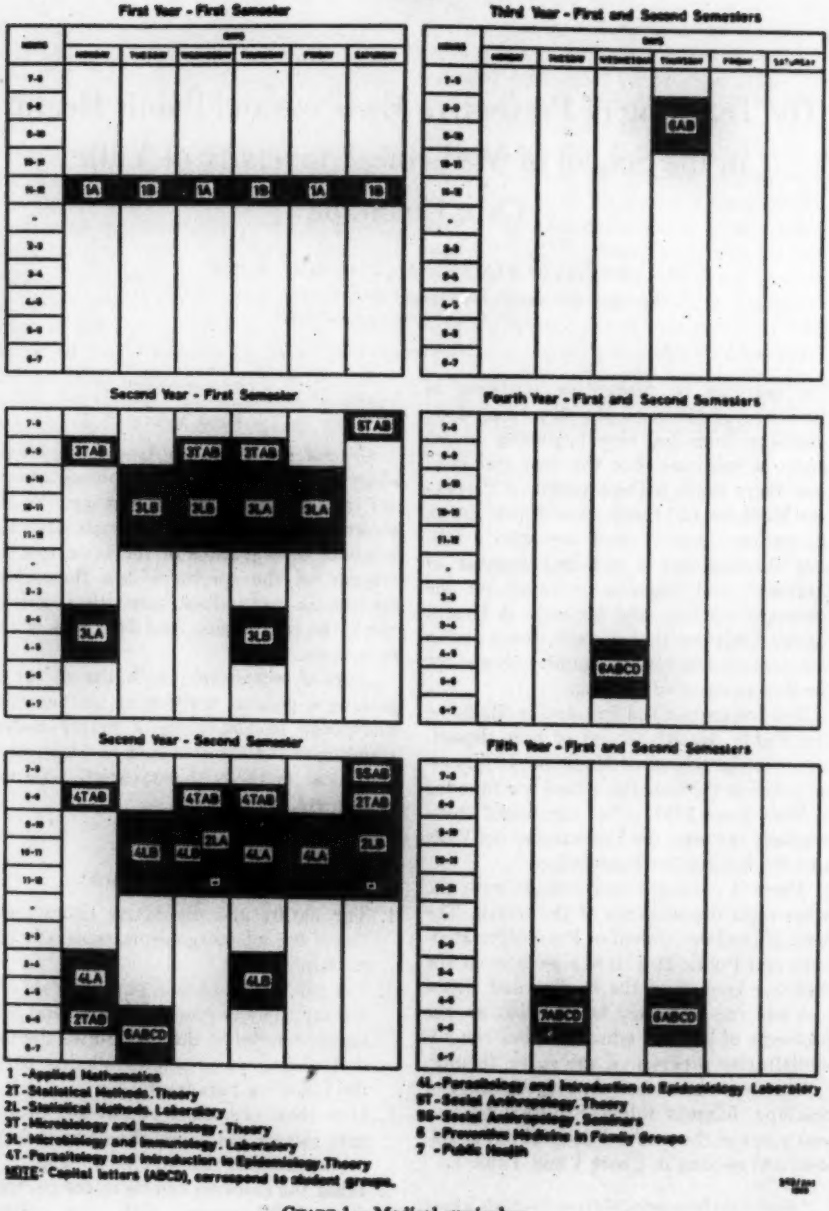

CHART 1.—Medical curriculum

TABLE 1

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH*
Activities
1957–58

Course Year	Subject	Place	Lenght		Student hours per year		
			Semester	Annual	Theory	Seminar, lab. and field work	Total
1	Biology (General Ecology)	S	Yes	—	6	2 seminars, 2 hours each	10
	Applied Mathematics	S	Yes	—	26	30	56
2	Microbiology	S-FH H	1st semester	—	38	103	141
	Immunology	S-FH H	End of 1st semester	—	9	22	31
	Parasitology	S-FH	2d semester	—	37	101	138
	Introduction to Epidemiology	S	End of 2d	—	8	19	27
	Statistical Methods	S-FH H	2d semester	—	34	32	66
	Social Anthropology	S-FH	—	Yes	17	15 seminars, one hour each	32
	Preventive Medicine in family groups	FH-S H	2d semester	—	—	5 seminars; 10 family visits; 2 hours each	30
3	Preventive Medicine in family groups	FH-S H	—	Yes	—	5 seminars; 10 family visits; 2 hours each	30
4	Preventive Medicine in family groups	FH-S H	—	Yes	—	9 seminars; 9 family visits; 9 laboratories and 9 out-patient care; 2 hours each	72
5	Preventive Medicine in family groups	FH-S H	—	Yes	—	11 seminars; 11 family visits; 11 consultations OPD; 2 hours each	66
	Public Health:	S-FH	—	Yes			74
	Biostatistics				12	12	
	Epidemiology				13	17	
	Environment Sanitation				14	6	
	Public Health Adm.						
6	Rotating internship	FH S-H	—	—	4 full weeks per student		176
7	Residency	FH S-H	—	Yes	Initiated in Sept., 1957		
8	Rural Medicine	RPC	—	Yes	To be initiated in July, 1958		

* Abbreviations: S = school; HC = health center; FH = family home; H = hospitals; RPC = rural pilot center.

method of obtaining samples and remitting them.
5. Initiating the student in the norms of prophylaxis.

Immunology. A course oriented to:

1. A synthesis of the knowledge of immunity and pathogenicity that has been expounded during the course of the year and in the study of bacteria, viruses, parasites, etc.
2. Basic epidemiological concepts for the later study of: immunotherapy and immunoprophylaxis; infections and parasitic diseases and allergic infirmities, including immunodiagnostic methods; microbiological and human ecological aspects in relation to the resistance and susceptibility to, and contacts and propagation of, disease, and with reference to the immunity status of the individuals and the community.

Parasitology.—With the object of teaching the general aspects of morphology—those that are indispensable for the microscopic diagnosis for general medical use. Special importance is given to the life cycles of parasites, the relation with the host, pathogenicity, and the ecological aspects of parasitic diseases. In every chapter the means of prevention and control are discussed. *Practical work in the laboratory is done as far as possible with live material obtained by the students among families in the section of Siloé to which each one has been assigned.*

Introduction to epidemiology.—In which we seek:

1. On the one hand to familiarize the students with terms which he will encounter in his later studies, perhaps without having an opportunity to define them, since it is considered that they are already known.
2. To impress the future doctor with the following ideas:
   a) That multiple and complex influences intervene in pathogenesis, which concept is as applicable to the diagnosis and treatment as to the prevention of diseases.
   b) That the problem of every clinical case cannot be resolved within four walls, because it always arises in the family and social environment and at the same time projects itself back to the same environment.
   c) That the specific causal agent of a disease is not always the exclusive cause of it.
   d) That although epidemiological methods have to date been most successful in the area of infectious disease, the same methodology is applicable to non-infectious and mental diseases.

Statistical methods.—This course tends to familiarize the student with the handling of statistical methods for the solution of quantitative problems in medicine and in scientific investigation.

Social anthropology, with the object of studying the scientific character of social sciences, fundamental concepts of sociology, social status and social classes, culture, the reasons of behavior, personality, habits and instincts, the group, urban and rural community, prerequisites for the continuation of society, the family, dynamics of the family, leadership.

Fifth Year

Public Health.—This course is conducted as an integral part of medical teaching.

1. *Epidemiology.*—The final goal of Epidemiology is to contribute to the prevention and control of disease and to the promotion and conservation of physical, mental, and social health. These objectives can generally be achieved by an understanding of the principal and secondary factors that serve as a foundation to health and of factors that relate to disease, and by finding and evaluating the various methods of controlling these factors. In this course an effort will be made to demonstrate that these purposes can be realized, as present and past experience prove, by applying epidemiological principles, methods, and analysis to the informa-

tion obtained from other sciences, such as Physiology, Psychobiology, Parasitology, Microbiology, Biostatistics, Pathology, and others that, by their relation to the facts and their analysis, supply information that is essential to the solution of health problems. This is done by lectures, seminars, exercises, and the study of selected reference works. Wherever possible, examples are taken from local problems that illustrate epidemiological principles and methods not only of infectious diseases but also of chronic and other types of disease.

2. *Environmental sanitation, Public Health administration, Biostatistics.*—In this course the student is instructed in the principles of these fields by lectures, seminars, visits to various community organizations, exercises on the problems of the country and in the program of comprehensive medicine for families in the community of Siloé that is under the direction of the Department of Preventive Medicine and Public Health of the Faculty. The reason for this orientation within the program of the Faculty is that the country's sanitary programs are commonly directed and attended by doctors who need at least general knowledge in this field.

Second, Third, Fourth, and Fifth Years

Preventive Medicine in family groups.—This program permits the orientation of medical instruction to the needs of the community. It prepares the future doctor to function in urban areas, introducing the qualitative and quantitative concepts of modern epidemiology, correlating acquired knowledge of basic science and its clinical application, and attracting his interest by the multiple causes of diseases, the reciprocal influence of the individual, and the physical-chemical, biological, family, and social environment. He is taught to understand the relation that exists between the loss of health, and its personal, family, and social sequences; to evaluate the feasability of medical treatment or measures of a hygienic character, taking into account the price of health and the cost of the disease, and to supervise, in a friendly way, healthy individuals who must conserve their health and patients who must be treated and rehabilitated.

For the development of medical instruction in a community, a program was initiated in 1956 in the community of Siloé, a section of Cali. Siloé has approximately 20,000 inhabitants and is about 3 minutes from the University Medical Center (School of Medicine, School of Nurses, University Hospital, and Maternity Clinic).

A family in Siloé is assigned to every 2d-year student at the beginning of the second academic semester, and this family remains under his care and observation during the entire course of his medical studies.

Actually at this moment there are 1,014 persons in 103 families assigned to students of the 2d, 3d, 4th, and 5th years. A group of students is assigned to one section of the Siloé that has been chosen on the basis of data relating to social relations by means of investigations made by the Department. This sets them apart as an informal group, with informal leaders, in areas that represent the diversified conditions of Siloé with stable families composed of a sufficient number of individuals of all ages, of both sexes, and disposed to cooperate in the program which has been previously explained to them.

The student group has either a temporary or a permanent director who is responsible for its activities, and each student is in charge of two families for special care, although the group works as a team during the general health program. The group meets together periodically for seminars at regular predetermined hours.

During periodical visits to Siloé, background information is gathered concerning the families being followed, on forms and cards furnished by the Section of Statistics in order to obtain tabulated data for seminar discussions.

Family meetings are promoted, for various purposes, especially relating to educational objectives for the community. At the end of the year, each group has to present a written report concerning its community. In

the report various effects of the program on the family are evaluated, along with the reactions of the student to the family and the program. The department consolidates and analyzes all information relating to the families and the elements of which it is constituted by means of the investigations made by the sections of Parasitology, Microbiology, Statistics, Epidemiology, Social Anthropology, and OPD. In the out-patient department (OPD), special emphasis is given to Obstetrics, Pediatrics, Internal Medicine, and Gerontology. For each one of these services there are in the department full-time doctors and consultants from the clinical departments, as well as consultants in the specialties and in hospital care in the HDU (adults and children) and Maternity Clinic. Two public health nurses, two general nurses, one auxiliary nurse, one social worker, auxiliary laboratory personnel—all of them full time—complete the team of the department.

Services

The following services are available for the out-patient and home care of families in the program.

a) Socio-economical and cultural studies of the community and Social Service.

b) Prenatal care.

c) Observation of growth and development of children.

d) OPD for adults.

e) Immunizations.

f) Ophthalmology.

g) Dental preventive medicine.

h) Nutrition.

i) Nursery.

j) Public Health Laboratory.

k) X-Rays.

l) Consultation for specialties and hospitalization in the university hospital and maternity clinic.

The above services are given by staff members of the department and consultants from the Departments of Psychiatry, Pediatrics, Obstetrics, Pathology, Medicine, and Surgery.

Each family member receives periodical medical attention and acute care in case he asks for it.

Home Visits, Out-patient Care, and Seminars

In each academic year, starting with the 2d year, the students are divided into small groups to assist successively in the seminars, to visit the families assigned in Siloé, and to follow the out-patient and other services of the department that study and observe the individuals of the families in the program (Tables 2–5).

In the seminars, out-patient department, laboratories, and during home visits, the students are supervised and accompanied by the teaching staff of the department and the consultants from other departments, previously appointed for that purpose.

In the 2-hour weekly seminars, the group of students and professors of the department of Preventive Medicine and Public Health and other departments discuss the problems of the families. Depending on the academic level of the students, the discussions are focused on the ecological, socio-economical, parasitological, microbiological, and clinical aspects of the individuals within the family unit and on the family as the basic unit of the community, around which are concentrated the responsibilities and attitudes of the modern physician with respect to the preventive medicine and public health.

CRITICAL EVALUATION OF THE PROGRAM 1 YEAR AFTER ITS INITIATION

One year's experience has made it possible for us to reach some conclusions which should be kept in mind in this type of work.

1. The students, in their visits to the families, should be accompanied and supervised by staff members. Otherwise, the student will not use his time efficiently; he will face problems which he cannot solve by himself, and in certain circumstances frustration can occur or he identifies himself with his family in the program, overlooking important details and finding difficulty in communicating with the people because of his inexperience in human relations;

2. Because of professional tradition existing in our atmosphere, the student tries to

consider the study of illness as the only purpose of the program without considering the multiple ecological or socio-economical aspects, as well as the significance and importance of the promotion of health, specific protection, prompt diagnosis and early treatment, limitation of disability, and rehabilitation;

3. For the same reason, he tries to indicate or suggest medical treatment which, even if indispensable, should be recommended only after a previous and careful scientific study of the patients.

4. One monthly visit to the families of the section is sufficient; this visit should be made in small groups, accompanied by teaching staff.

5. The family study should be carefully planned in advance in order to obtain full value from the observations. Each group should consider the problems corresponding to its academic level, i.e., a 2d-year student will not study the same aspects as a 5th-year student.

6. It is desirable that 4th- and 5th-year students have an opportunity to attend in the OPD members of the family which has been assigned to them with the assistance of teaching personnel in each medical specialty. For this reason the collaboration of the clinical departments, in this type of extramural teaching, is considered indispensable.

7. The observations made by the student should be registered in the folder which should be reviewed periodically by staff members in order to make comments to the student.

The above demands a very carefully organized Department of Preventive Medicine and Public Health with sufficient personnel dedicated to the work, working in close cooperation with the other departments of the Faculty, an adequate budget, and an efficient administrative organization.

TABLE 2

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
Preventive Medicine in Family Groups
Seminars and Home Visits
Second Year
1957–58
Tuesday 5–7 P.M.

Weeks	Distribution of the groups for Home visits	Seminars	Composition of the groups
1	Introductory lecture		
2	ABCD		
3	ABCD		
4		ABCD	
5	ABCD		
6	ABCD		
7		ABCD	Groups A and B
8	ABCD		9 students each
9	ABCD		Groups C and D
10		ABCD	10 students each
11	ABCD		
12	ABCD		
13		ABCD	
14	ABCD		
15	ABCD		
16		ABCD	
Total hours per student per year	20	10	30

Seminars: Each group of students will rotate with any one of the following professors: Social Anthropology, Microbiology, Parasitology, Epidemiology.

Home Visits: Each group of students will make the home visits to Siloé accompanied with one of the above professors.

Sixth Year—Internship

The student works as an intern during 50 weeks, rotating in the following departments:

Medicine	8 weeks
Obstetrics and Gynecology	8 "
Surgery	6 "
Pediatrics	6 "
Psychiatry	6 "
ENT	4 "
Emergencies	4 "
Pathology	4 "
Preventive Medicine	4 "

During the time of internship in Preventive Medicine the student follows the program schedule in Tables 6, 7, and Chart 2 and assists in the Seminars with fourth- and fifth-year students.

Seventh Year—Residency

(Table 7, Chart 2)

The student chooses his field or major interest in which to do his residency during 50 weeks in the following rotation:

Basic Sciences: Eight months in a depart-

TABLE 3

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
Preventive Medicine in Family Groups
Seminars and Home Visits
Third Year
1957–58
Thursday 8–10 A.M.

WEEKS	DISTRIBUTION OF THE GROUPS FOR Seminars	Home visits	COMPOSITION OF THE GROUPS
1	Introductory lecture		
2	A-1	A-2 A-3	
3	B-1	B-2 B-3	
4	A-3	A-1 A-2	
5	B-3	B-1 B-2	
6	A-2	A-3 A-1	
7	B-2	B-3 B-1	
8	A-1	A-2 A-3	
9	B-1	B-2 B-3	
10	A-3	A-1 A-2	
11	B-3	B-1 B-2	
12	A-2	A-3 A-1	
13	B-2	B-3 B-1	Groups A-1, A-2, A-3, B-1, B-2, B-3, alternating with Psychopathology
14	A-1	A-2 A-3	
15	B-1	B-2 B-3	
16	A-3	A-1 A-2	
17	B-3	B-1 B-2	
18	A-2	A-3 A-1	Five students each
19	B-2	B-3 B-1	
20	A-1	A-2 A-3	
21	B-1	B-2 B-3	
22	A-3	A-1 A-2	
23	B-3	B-1 B-2	
24	A-2	A-3 A-1	
25	B-2	B-3 B-1	
26	A-1	A-2 A-3	
27	B-1	B-2 B-3	
28	A-3	A-1 A-2	
29	B-3	B-1 B-2	
30	A-2	A-3 A-1	
31	B-2	B-3 B-1	
Total hours per student per year	10	20	30

TABLE 4

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
Preventive Medicine in Family Groups*
Fourth Year
1957–58
Wednesday 4–6 P.M.

WEEKS	DISTRIBUTION OF THE GROUPS FOR				COMPOSITION OF THE GROUPS
	Seminars	Home visits	Laboratory	OPD	
1	Introductory lecture				
2	A	B	C	D	
3	D	A	B	C	
4	C	D	A	B	
5	B	C	D	A	
6	A	B	C	D	
7	D	A	B	C	
8	C	D	A	B	
9	B	C	D	A	
10	A	B	C	D	
11	D	A	B	C	
12	C	D	A	B	
13	B	C	D	A	
14	A	B	C	D	Groups A, B, C
15	D	A	B	C	Six students each
16	C	D	A	B	
17	B	C	D	A	
18	A	B	C	D	Group D
19	D	A	B	C	Seven students each
20	C	D	A	B	
21	B	C	D	A	
22	A	B	C	D	
23	D	A	B	C	
24	C	D	A	B	
25	B	C	D	A	
26	A	B	C	D	
27	D	A	B	C	
28	C	D	A	B	
29	B	C	D	A	
30	A	B	C	D	
31	D	A	B	C	
32	C	D	A	B	
33	B	C	D	A	
34	A	B	C	D	
35	D	A	B	C	
36	C	D	A	B	
Total hours per student per year	18	18	18	18	72

* The laboratory group is divided into two groups: one for Microbiology and one for Parasitology.

The group in OPD is divided into three subgroups: one for Obstetrics, one for Pediatrics, and one for General Medicine.

ment of basic sciences; the rest in one of the clinical departments.

Medicine: Seven months in the Department of Medicine, 2 in Pathology, 2 in Pediatrics, and 2 in Surgery.

Surgery: Eight months in the Department of Surgery, 2 in Pathology, and 2 in Medicine.

Pediatrics: Six months in the Department of Pediatrics, 2 in Preventive Medicine, 2 in the Premature Service in Obstetrics, and 2 in Pathology.

TABLE 5

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
Preventive Medicine in Family Groups
Fifth Year
1957–58
Thursday 4–6 P.M.

			Distribution of the groups for OPD				
Weeks	Home visits	Seminars	Obstetrics	Pediatrics	General	Gerontology	Composition of the groups
1	ABCD						
2		ABCD					
3			A	B	C	D	
4	ABCD						
5		ABCD					
6			D	A	B	C	
7	ABCD						
8		ABCD					
9			C	D	A	B	
10	ABCD						
11		ABCD					
12			B	C	D	A	
13	ABCD						
14		ABCD					Groups A, B, C, D
15			A	B	C	D	Five students each
16	ABCD						
17		ABCD					
18			D	A	B	C	
19	ABCD						
20		ABCD					
21			C	D	A	B	
22	ABCD						
23		ABCD					
24			B	C	D	A	
25	ABCD						
26		ABCD					
27			A	B	C	D	
28	ABCD						
29		ABCD					
30			D	A	B	C	
31	ABCD						
32		ABCD					
33			C	D	A	B	
Total hours per student per year	22	22		22			66

Seminars: Each group of students assist to seminars with:
One staff member from the Department of Preventive Medicine and Public Health;
One staff member of one of the Department of Basic Sciences (Morphology, Physiology, Nutrition, Pharmacology);
One staff member of one of the Clinical Departments;
One nurse; and
One social worker.

Home visits: Each group of students go to Siloé accompanied by one of the staff members of the Department of Preventive Medicine and Public Health.

Obstetrics and Gynecology: Eight months in the Department of Obstetrics, 2 in Pathology, and 1 in Pediatrics.

Psychiatry: Eight months in the Department of Psychiatry, 2 in Preventive Medicine, 2 in Medicine (Neurology).

In Preventive Medicine the student follows the program scheduled in Tables 8 and 9.

Eighth Year—Rural Medicine

A pilot unit consisting of a health center and hospital will be opened in the Municipio of Candelaria, a rural zone 30 minutes by road from Cali. The Department of Preventive Medicine and Public Health will be the coordinator of the institutions which are cooperating in its planning and development.

The Municipio of Candelaria has a population of 19,370, estimated in July, 1957.

The pilot unit for medical assistance and medical and sanitary education in Candelaria has a building constructed for these special purposes. It will be run by four physicians who have finished their year of resi-

TABLE 6

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH

Schedule
Sixth year
Interns
1957–58

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8– 9	Outpatient care		Hospital		Hospital	CPC
9–10		Home visits		Home visits		
10–11	Staff meeting		Outpatient care		Revision of clinical histories Analysis of data	Revision of clinical histories Analysis of data
11–12						
2– 3	Revision of clinical histories. Analysis of data	Pediatrics	Pediatrics	Pediatrics	Pediatrics	Pediatrics
3– 4	Obstetrics	Gerontology	Laboratory	Gerontology	4th-year seminar	Gerontology	5th-year seminar	Gerontology	Laboratory	Gerontology
4– 5						
5– 6						

dency in the Faculty of Medicine of the Universidad del Valle, a sanitary engineer, architect, social anthropologist, public health nurses, general nurses, auxiliary nurses, nursing students of the Universidad del Valle, and Social workers. The faculty has the total scientific administrative responsibility for the Unit.

The purpose of the pilot unit will be to provide:

1. Medical education at rural level for medical students and nursing students of the Universidad del Valle,

2. Training in Preventive Medicine and Public Health for physicians and technical personnel who work in sanitary units of the Department of Valle and depend directly on it,

3. Assistance for the sanitary and medical services of the Municipio of Candelaria, and

4. Facilities for medical and public health research in the same area.

Patients that require specialized care of major surgical treatment will be moved to the University Hospital.

TABLE 7

UNIVERSITY OF VALLE SCHOOL OF MEDICINE
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH

Schedule
Seventh Year
Residents
1957–58

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8– 9	Outpatient care		Hospital		Hospital	CPC
9–10		Home visits		Home visits		
10–11	Staff meeting		Outpatient care		Revision of clinical histories Analysis of data	Revision of histories Analysis of data
11–12						
2– 3	Revision of clinical histories. Analysis of data	Pediatrics	Pediatrics	Pediatrics	Pediatrics	Pediatrics
3– 4	Pediatrics	Pediatrics	Pediatrics	Pediatrics	Pediatrics	
4– 5	Obstetrics	Revision of clinical histories. Analysis of data	4th-year seminar	5th-year seminar	Revision of clinical histories. Analysis of data	Gerontology
5– 6	Gerontology	Gerontology	Gerontology	Gerongology	Gerontology	

The following services will be provided by the pilot unit:

1. Out-patients care for: Obstetrics (pre- and post-natal), children, and adults.
2. Emergencies
3. Hospitilization for sixteen patients, as follows: Obstetrics, five beds; children, six beds; adults, females, three beds; adults, males, two beds.
4. Clinical Laboratory
5. X-Rays
6. Public Health: Epidemiology and communicable diseases, statistics, maternal and child health, public health education, rehabilitation, dental care, environmental sanitation, and public health laboratory.

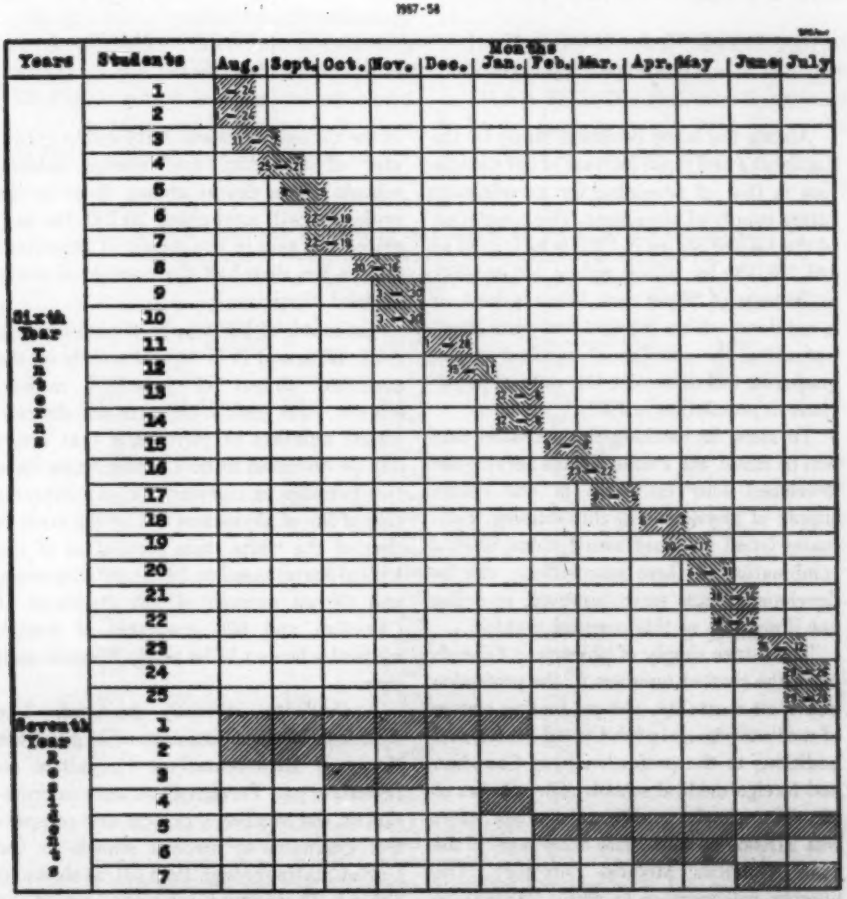

CHART 2.—University of Valle School of Medicine, Department of Preventive Medicine and Public Health; interns and residents.

The project of Candelaria is considered to be the first step in the integration of public health, preventive medicine, curative medicine and community development in the Department of Valle with the cooperation of the Ministry of Health.

Physicians in the United States: Projections 1955–75

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Among the many problems raised by the continuing and rapid increase of our population is that of providing for an adequate future supply of physicians. The population of the United States in 1955 is estimated at 165,270,000; by 1975 it will be 228,463,000, an increase of 38 per cent. What is done, or is not done, within the next few years about increasing the number of medical school graduates will determine the ratio of physicians to population in 1975.

To assist in reaching the decisions that will be made, the Public Health Service has developed four estimates of the future supply of physicians in this country. Estimates based on other assumptions, or on a combination of these assumptions, can be developed. These serve, however, to define one dimension of this complex problem.

The future supply of physicians depends upon the current numbers in the profession and their mortality, the graduating classes of medical schools in the United States, and additions to the profession from Canadian and foreign medical schools. The number of physicians in the continental United States was 218,061 in mid-1955, according to the 1956 American Medical Directory. The number will increase to about 235,900 by 1960. During that 5-year period licentiates representing new additions to the medical profession are estimated at 38,522 of whom 34,708 will be graduates of medical schools in the United States and 3,814 will be graduates of Canadian and foreign medical schools. Since deaths among those in the profession will total about 20,700, the estimated net gain in the supply of physicians will be less than half the number of newly licensed physicians.

Estimates of the supply of physicians in 1965, 1970, and 1975 depend mainly on the predicted output of American medical schools. Four graduation rates and the estimated numbers of physicians that result will be discussed in turn. These series have two premises in common: (*a*) the expectation of life of physicians will be the same as that of the white male population of the United States based on 1955 mortality rates, and (*b*) an average of 150 graduates of Canadian and 600 graduates of foreign medical schools will be newly licensed each year.

I. *Graduates currently predicted.*—The American Medical Association has given the House of Representatives Committee on Interstate and Foreign Commerce information on the number of present and prospective graduates of medical schools in the United States through 1965 (3), as shown in Table 1. These figures take into account the development of new medical schools at the universities of Kentucky and Connecticut, bringing the expected annual number of graduates up to 7,410 in 1965. While there are the possibilities of developing additional medical school facilities in San Antonio, Texas, and Toledo, Ohio, and a school of

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basic medical sciences in Arizona and in New Mexico (5), plans at this time are not definite. The annual number of graduates is, therefore, predicted at the 7,410-level up to 1975.

At this rate of graduation, the estimated output of United States medical schools is 145,373 in the period 1955–1974. During this 20-year period an estimated additional 15,064 Canadian and foreign medical school graduates will be newly licensed in the United States. By 1975 death will have taken about 4,200 of these recent graduates, and nearly 84,000 of those in the profession in 1955. Thus, the total number of physicians is expected to be about 290,400 in 1975.

The number of physicians per 100,000 population declined from 134.9 in mid-1949 to 131.9 in 1955. The 1965 ratio is expected to be the same as that in 1955. Under the assumption of currently predicted gradua-

TABLE 1

ASSUMPTION THAT THE NUMBER OF GRADUATES OF MEDICAL SCHOOLS IN THE UNITED STATES WILL NOT INCREASE ABOVE THE LEVEL CURRENTLY PREDICTED FOR EXISTING AND PLANNED SCHOOLS

	PHYSICIANS IN CONTINENTAL U.S. AS OF JULY 1		GRADUATES OF U.S. MEDICAL SCHOOLS*		NEW LICENTIATES GRADUATED FROM OTHER MEDICAL SCHOOLS†		DEATHS AMONG THOSE IN THE PROFESSION
YEAR	No.	Per 100,000 population‡					
1955	218,061	131.9	6,977		760		
1956			6,845		618		
1957			6,796	34,708	911	3,814	20,661
1958			6,970		775		
1959			7,120		750		
1960	235,922	131.5	7,290		750		
1961			7,290		750		
1962			7,290	36,565	750	3,750	21,301
1963			7,335		750		
1964			7,360		750		
1965	254,936	131.9	7,410		750		
1966			7,410		750		
1967			7,410	37,050	750	3,750	22,262
1968			7,410		750		
1969			7,410		750		
1970	273,474	130.6	7,410		750		
1971			7,410		750		
1972			7,410	37,050	750	3,750	23,865
1973			7,410		750		
1974			7,410		750		
1975	290,409	127.1	7,410		750		

* Figures for 1955–57 published in the *J.A.M.A.*, 165:1420, 1957. Figures for 1958–65 furnished by the American Medical Association to the House of Representatives Committee on Interstate and Foreign Commerce; see *Medical School Inquiry*, pp. 242, 243.

† Licentiates representing additions to the medical profession in the U.S. and dependencies, as reported in the *J.A.M.A.*, numbered 7,737 in 1955; of these, 6,830 were graduates of U.S. and Canadian schools and 907 of foreign schools. For 1956 the corresponding figures were 7,463; 6,611; and 852. Although all graduates of U.S. medical schools are not licensed within a year of their graduation, they are potential additions to the medical profession and hence are so counted in this table. Therefore the 1955 and 1956 figures for graduates from schools outside the U.S. have been adjusted in order to maintain the total number of licentiates from all schools.

‡ Rates based on total population of the United States, including Armed Forces overseas, July 1, 1955, to 1975, as follows: (in thousands) 165,270 in 1955; 179,358 in 1960; 193,346 in 1965; 209,380 in 1970; 228,463 in 1975. Source: U.S. Bureau of the Census. *Current Population Reports*, Series P-25, No. 154 (for 1955 data) and No. 123 (Table 1, series AA, for 1960 to 1975 data).

tions from United States medical schools, the physician-population ratio may be expected to drop to 130.6 in 1970 and further to 127.1 in 1975.

II. *Graduates increased through more basic science schools.*—The Association of American Medical Colleges has advocated an increase in the output of medical schools through the establishment of new programs in medical education which would offer the first 2 years of the 4-year medical course. A recent survey reveals that existing 4-year schools could absorb, each year, up to 400 students from new 2-year programs into their third year classes (1).

This suggested increase in enrollment in existing medical schools is shown in Table 2 as resulting in an expansion in the annual number of graduates from 7,410 to 7,810 between 1965 and 1969. Thereafter, the annual number of graduates is predicted at 7,810.

Under this assumption of additional graduates through the establishment of about ten new basic medical science schools with an average of 43 first-year students per school, the total number of physicians in 1975 would be 293,400, or 128.4 per 100,000 population.

III. *Graduates to maintain 1955 ratio of physicians to total population.*—If it is assumed that the ratio of physicians to population which prevailed in 1955 is the appropriate goal for 1975, there will be need for 301,400 physicians instead of the 290,400 which may be expected on the basis of currently predicted school output. To obtain this total would require an additional 11,050 graduates from United States medical schools above the number now expected.

The inability of existing schools to expand their enrollment in any substantial way suggests that such an increase could

TABLE 2

ASSUMPTION THAT THE NUMBER OF GRADUATES OF MEDICAL SCHOOLS IN THE UNITED STATES WILL BE INCREASED THROUGH THE ESTABLISHMENT OF MORE BASIC SCIENCE SCHOOLS

Year	Physicians in continental U.S. as of July 1		Graduates of U.S. medical schools		New licentiates graduated from other medical schools		Deaths among those in the profession
	No.	Per 100,000 population					
1955	218,061	131.9	6,977		760		
1956			6,845		618		
1957			6,796	34,708	911	3,814	20,661
1958			6,970		775		
1959			7,120		750		
1960	235,922	131.5	7,290		750		
1961			7,290		750		
1962			7,290	36,565	750	3,750	21,301
1963			7,335		750		
1964			7,360		750		
1965	254,936	131.9	7,410		750		
1966			7,510		750		
1967			7,610	38,050	750	3,750	22,267
1968			7,710		750		
1969			7,810		750		
1970	274,469	131.1	7,810		750		
1971			7,810		750		
1972			7,810	39,050	750	3,750	23,887
1973			7,810		750		
1974			7,810		750		
1975	293,382	128.4	7,810		750		

only be met through the development of additional medical schools. Expanded facilities equivalent to two new schools being opened in 1961 and in each of nine subsequent years would attain the goal of 301,400 physicians by 1975 (Table 3).

Each such new school is estimated as having 50 graduates in its first class, 65 in the second, and 90 thereafter—90 being the average number of graduates per school now in existence. The predicted increase of age-eligible population indicates that there should be no shortage of applicants for these schools. Between 20,500 and 31,700 persons will apply for admission to medical schools in 1964, according to estimates in the *Journal of Medical Education*(2).[1] In 1956 there were nearly 16,000 applicants for the 8,014 freshman places.

Under this assumption, 20 new medical schools would be added to the 87 scheduled for existence in 1965. The annual number of graduates would be correspondingly augmented to reach 9,460 by 1975.[2]

IV. *Graduates to maintain 1955 ratio of graduates to population aged 20–24.*—The number of students enrolled in medical schools has shown a steady growth in recent years. In 1955 the number was at the highest level in our history. This expansion, however, has not kept pace with the increase in the number of youths just past their teens or of enrollments in all schools of higher learning. Actually, the proportion of college students entering the field of medicine is declining (4).

TABLE 3

ASSUMPTION THAT THE NUMBER OF GRADUATES OF MEDICAL SCHOOLS IN THE UNITED STATES WILL BE INCREASED SUFFICIENTLY TO REGAIN AND MAINTAIN THE 1955 RATIO OF 131.9 PHYSICIANS PER 100,000 POPULATION

Year	Physicians in continental U.S. as of July 1		Graduates of U.S. medical schools		New licentiates graduated from other medical schools		Deaths among those in the profession
	No.	Per 100,000 population					
1955	218,061	131.9	6,977		760		
1956			6,845		618		
1957			6,796	34,708	911	3,814	20,661
1958			6,970		775		
1959			7,120		750		
1960	235,922	131.5	7,290		750		
1961			7,290		750		
1962			7,290	36,565	750	3,750	21,301
1963			7,335		750		
1964			7,360		750		
1965	254,936	131.9	7,510		750		
1966			7,740		750		
1967			8,020	40,050	750	3,750	22,278
1968			8,300		750		
1969			8,480		750		
1970	276,458	132.0	8,660		750		
1971			8,840		750		
1972			9,020	45,100	750	3,750	23,938
1973			9,200		750		
1974			9,380		750		
1975	301,370	131.9	9,460		750		

[1] It might also be noted that the American Medical Association has projected the number of applicants to 1965, with a range of 21,800 to 33,700 for that year (see *Medical School Inquiry*, p. 212).

[2] Continuation of graduates at this 1975 level would result in an estimated supply of 400,000 physicians in the year 2000. With a projected population of 320–340 million for that year, the physician-population ratio would be at the level of 118–125 physicians per 100,000 population.

Between 1955 and 1965 the number of persons in the age group of 20–24 years will be increased by 25 per cent, college students by 76 per cent, and medical students (or graduates) by 6 per cent at the rate of graduation currently predicted. Between 1955 and 1975 the increases will be 79 per cent, 172 per cent, and 11 per cent, respectively.

to provide 8,720 graduates instead of the 7,410 now contemplated. Were this ratio of 64.8 to be adopted as a goal in planning training programs, the school build-up would presumably be gradual. The projections presented in Table 4 provide about 360 additional graduates each year between 1961 and 1965. Continuance of this ratio to 1975 requires substantial annual increases

TABLE 4

ASSUMPTION THAT THE NUMBER OF GRADUATES OF MEDICAL SCHOOLS IN THE UNITED STATES WILL BE INCREASED SUFFICIENTLY TO REGAIN AND MAINTAIN THE 1955 RATIO OF 64.8 MEDICAL SCHOOL GRADUATES PER 100,000 POPULATION AGED 20–24 YEARS

	Physicians in continental U.S. as of July 1		Graduates of U.S. medical schools			New licentiates graduated from other medical schools		Deaths among those in the profession
Year	No.	Per 100,000 population (all ages)	No.		Per 100,000 population aged 20–24*			
1955	218,061	131.9	6,977		64.8	760		
1956			6,845		62.9	618		
1957			6,796	34,708	61.9	911	3,814	20,661
1958			6,970		62.9	775		
1959			7,120		63.7	750		
1960	235,922	131.5	7,290		64.7	750		
1961			7,290		62.2	750		
1962			7,640	38,580	62.9	750	3,750	21,311
1963			8,000		63.6	750		
1964			8,360		64.2	750		
1965	256,941	132.9	8,720		64.8	750		
1966			9,220		64.8	750		
1967			9,720	48,590	64.8	750	3,750	22,343
1968			10,220		64.8	750		
1969			10,710		64.8	750		
1970	286,938	137.0	11,210		64.8	750		
1971			11,470		64.8	750		
1972			11,720	58,620	64.8	750	3,750	24,129
1973			11,980		64.8	750		
1974			12,240		64.8	750		
1975	325,179	142.3	12,490		64.8	750		

* Rates based on population in the age group 20–24 years, including those in the Armed Forces overseas, July 1, 1955, to 1975, as follows: (in thousands) 10,775 in 1955; 11,276 in 1960; 13,461 in 1965; 17,301 in 1970; 19,281 in 1975. Source: U.S. Bureau of the Census. *Current Population Reports*, Series P-25, No. 146 (for 1955 data) and No. 123 (Table 1, series AA, for 1960 to 1975 data).

The ratio of graduates of United States medical schools to the population in the age group of 20–24 years was 64.8 per 100,000 in 1955. The number of graduates predicted for 1961 represents a corresponding ratio of only 62.2.

To regain the ratio of 64.8 medical school graduates per 100,000 persons aged 20–24 by 1965 would necessitate expansion of schools through the balance of the period until the number graduating reaches 12,490.

This goal, if attained and consistently sustained throughout the period, would provide about 325,200 physicians in 1975.

SUMMARY

The future supply of physicians in the continental United States has been pre-

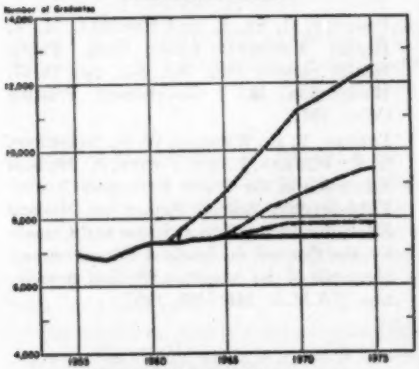
dicted under four series of estimates of graduates of medical schools in the United States. The predictions take into account new licentiates graduated from Canadian and foreign medical schools and deaths among those in the profession.

The number of graduates of medical schools in the United States currently predicted for existing and planned schools will be increased to 7,410 by 1975. In that year the number of physicians will be about 290,400, or a rate of 127.1 per 100,000 population, in contrast to the 1955 rate of 131.9 and the 1949 rate of 134.9 (Charts 1–3).

CHART 1

GRADUATES OF U.S. MEDICAL SCHOOLS, 1955–75

Four series of estimates

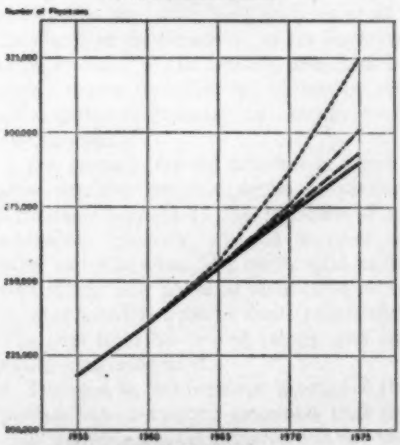


——— Rates currently predicted.
— — With more basic science schools.
— — — To maintain 1955 ratio of physicians to total population.
- - - - - To maintain 1955 ratio of graduates to population ages 20–24.

CHART 2

NUMBER OF PHYSICIANS, 1955–75

Under four series of estimates of graduates of U.S. medical schools

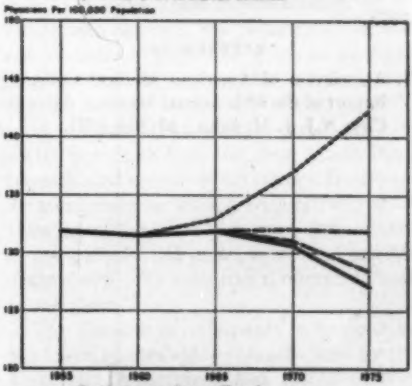


——— Rates currently predicted
— — With more basic science schools.
— — — To maintain 1955 ratio of physicians to total population.
- - - - - To maintain 1955 ratio of graduates to population ages 20–24.

CHART 3

PHYSICIAN-POPULATION RATIOS, 1955–75

Under four series of estimates of graduates of U.S. medical schools



——— Rates currently predicted.
— — With more basic science schools.
— — — To maintain 1955 ratio of physicians to total population.
- - - - - To maintain 1955 ratio of graduates to population ages 20–24.

By establishing new 2-year schools of basic medical sciences, the enrollment in the third- and fourth-year classes of existing medical schools could be increased by 400 students. In that case the number of physicians in 1975 would be increased to nearly 293,400, a rate of 128.4 per 100,000 population.

If the number of graduates of medical schools in the United States were to be increased sufficiently to regain and maintain the 1955 ratio of 131.9 physicians per 100,000 population, the equivalent of twenty new medical schools would have to be

added to the 87 now existing or planned. By 1975 the annual number of graduates would thereby be increased to 9,460 and the total number of physicians to 301,400.

If the number of graduates of medical schools in the United States were to be increased sufficiently to regain and maintain the 1955 ratio of medical school graduates to population aged 20–24, substantial increases would be required until the annual number graduating reached 12,490 by 1975. This would provide about 325,200 physicians, or a rate of 142.3 per 100,000 population, in 1975.

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Teaching Community Resources as a Part of Pediatric Training

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Traditionally, students of pediatrics have been preoccupied with the recognition and treatment of disease. However, it has become apparent that the student must have insight and knowledge of the total environment of the child if he is to deal effectively with child problems.

One important area of instruction in dealing with the child's needs is to teach awareness of community resources and how they may be used. The young pediatrician, entering active practice, encounters early and frequently the need of advising parents of community resources, and all too often he is unprepared to advise intelligently. This lack of preparation is reflected in his work with patients. Their problems may be summarily dismissed with "he'll grow out of it"; the giving of useless advice; or the fostering of dependency of the families upon him to such a degree that they fail to develop the self-confidence necessary to manage their own problems.

The present crowded schedule in a pediatric teaching program seems to present formidable barriers to the inclusion of an additional program without sacrifice of other essential areas. The meaningful inclusion of any new phase of instruction in an existing schedule must be done realistically. The goal is to be defined clearly and the limitations recognized.

The goal, in this instance, is to teach the pediatrician-in-training awareness that the child's environment extends beyond the confines of the hospital and clinics, and that there are individuals of nonmedical disciplines who can help the pediatrician in the management of problems which he may encounter. It is neither possible nor necessary that he become an anthropologist, juvenile judge, psychologist, priest, sociologist, or social worker to help the child attain ideal physical and mental development. However, he must learn to work collaboratively with these specialists and to respect their sphere of competence. He must, in short, learn his community—the resources it offers and how to use them.

The purpose of this paper is to describe the teaching method in this area used by the Pediatric Department and the Pediatric-Psychiatric Clinic of the University of Maryland, School of Medicine, and to give an evaluation of our results.

Methods.—Three years ago the pediatric residents were introduced to social problems and the means the community uses to work with them as an integral part of their basic pediatric training. The responsibility for working out the program was given the pediatric resident-in-chief and the psychiatric social worker of the Pediatric Psychiatric Clinic. The topics selected for discussion in the year 1956–1957 were as follows: dependent children; mental retardation; marital conflict and its effect upon children; the physically handicapped child; juvenile delinquency (preventive aspects); juvenile delinquency (treatment aspects).

It is obvious that it is not possible within a 1-year program to cover all the problems

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handled by the community or all the resources available. Omitted from this series were all agencies dealing with the emotionally disturbed child, since the pediatric residents rotate for 2 months in the pediatric-psychiatric clinic for children and there have an opportunity to develop some awareness of other such resources.

Each month two residents were given the assignment of contacting the psychiatric social worker to discuss the selected topic for the month, its implications for pediatrics, agencies working with this problem, and bibliography available. They would then select a related community agency to visit, an appointment would be made with the agency, and the two residents would plan to spend ½ day per month in the field visit. The social worker arranged the meeting at a time when the residents could attend a staff meeting or see the children engaged in activities and talk with members of the staff, as well as see the physical plant.

Following this they presented their observations at a general staff meeting, held monthly and attended by members of the Pediatric Department, medical students, and visiting physicians of the community. The psychiatric social worker was available to the residents for consultation in preparation for this meeting. Her activities varied with the interest of the resident. For some, mimeographed sheets giving a description of all the agencies in the area dealing with the problem was developed. This was filed for later individual use. For some, a bibliography was developed, and for others time was used to talk over some new concepts encountered on the visits. Many expressed their hostility about why so little was being done and commented on inadequate resources and similar related topics, while others came back to discuss resources seen in relation to specific cases they were treating.

The psychiatric social worker arranged to have resource people from the community attend the residents' presentation at the staff meeting to stimulate discussion and to answer questions of the group. The resource people included a representative from the agencies concerned with the problem being presented, as well as a pediatrician in private practice serving as a consultant to the agency or interested in the subject being discussed.

Two selected topics are presented to provide more specific information about methodology.

Marital conflict and its effects upon children.—The presentation of this topic included a case, which had been known to the Pediatric Department, of a physically healthy 3-year-old child who had cried profusely since birth. In the course of the diagnostic evaluation, it had been learned that the parents had been on the verge of a divorce and for many years had stayed together only for the sake of the child. The tension and stress of the parents had made the child feel insecure and unloved. When the parents were helped through the Family Agency to work out their own problems, the child responded. Because of the frequency of such cases in a pediatrician's practice, it was recognized that collaborative treatment by a pediatrician and a family agency can often be more helpful than treatment by either specialty alone.

The residents visited the Family Division of Family Service and Children's Aid and discussed the types of cases seen, how referrals are made, and the kind of treatment involved in each.

A social worker from the agency and a pediatric consultant for the agency attended the staff presentation of the residents and emphasized the need for interdisciplinary understanding and working together.

Juvenile delinquency.—This topic seemed to be of more general interest to the resident groups than any other. One resident became so interested that he volunteered to do several pediatric examinations for the juvenile court, in order to go over cases with the probation officer and to learn more about the children involved.

The subject was designed to cover 2 months, with all residents on the staff being involved in the 2d month.

A visit was planned to Boys Village, a State training school, to which children are committed by the court. The treatment, methods, and special problems encountered were discussed. The supervisor of the Protective Service Division of the Family Agency, who works with families and children prior to the case coming to court, was present at the staff conference. The residents were interested to learn that they, as practitioners, could refer cases of apparent neglect or mistreatment of children to her and that these would be studied and an attempt made to help the family. If necessary, the agency would take the responsibility of taking the case to court. This discussion became more meaningful because a family, well known in the clinic, was currently being taken to the court by this agency. An effort was made to see the delinquent as a child with problems rather than as a "bad boy."

During the 2d month all residents were given the opportunity of visiting the juvenile court session and discussing the case with the master or probation officer. This plan was worked out so that the residents could attend individually at their convenience.

Because all residents were involved in this, the staff presentation differed, and at this time we had a speaker, the master of the Juvenile Court, who discussed the problems facing the court and the resources in the community the court uses in fighting and treating juvenile delinquency.

Evaluation.—It is impossible to measure accurately the effectiveness of a teaching program except over a long period of time. The attitude of residents toward this program has varied considerably. Though, initially, there was little hostility to it, they were of the impression that it was not vitally important. They acknowledged theoretically the total concept of child care; however, they felt that this was time taken away from the management of the sick child. At first, the field visits were seen as interesting but of no real practical value; however, as private practicing pediatricians were included as resource persons along with representatives of the agencies, the program became more acceptable as a real learning experience. Giving the residents the responsibility of bringing back their observations, answering questions, and presenting the problems with the descriptions of the agencies to the entire staff helped them to become personally involved.

Open communication and mutual respect between the Head of Pediatrics, the chief pediatric resident, and the psychiatric social worker are essential for the residents' acceptance and identification with the program as an integral part of their learning in pediatrics. Positive statements about the value of the program by practicing pediatricians, who reported that they felt ill prepared for the responsibility of comprehensive pediatric practice, also contributed to resident acceptance.

Another aspect of this program has been the appreciation expressed by the participating agencies for the opportunity of sharing their thinking about these problems with pediatricians. They have expressed not only willigness to participate in the program, but eagerness for a chance to learn the pediatrician's point of view and a desire to work collaboratively with him.

It is hoped that taking the resident out of the hospital for this phase of his learning is conducive to widening his horizon regarding comprehensive pediatric care. Certainly, the pediatrician is in the front line of defense against mental and emotional illness. He can perform his preventive job only by learning to understand the child within the family—within the community. Though it is not our purpose to teach him social and family diagnosis, we believe that if he can become aware that there are problems other than medical ones and can learn how to work with other specialists and how to use community resources, he will be better prepared to practice comprehensive pediatrics.

The Use of Student-conducted Demonstrations in Pharmacology

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The re-evaluation of laboratory teaching techniques in pharmacology, as has been undertaken in many medical schools in the United States in recent years, is of primary interest to us, since we have effected a marked change in our own approach to the utilization of laboratory time. The program currently under way in this department at the University of Vermont College of Medicine is designed to broaden and sharpen the interests of the medical students toward pharmacology.

Over a period of 5 years, an annual evaluation of our own lecture and "cookbook"[1] laboratory course has been obtained by means of a comprehensive course critique completed by the students. This critique is a mimeographed form, designed to obtain a student evaluation of the specific teaching techniques utilized by the department, and, further, offers the students an opportunity to suggest methods of improving the caliber of the lecture and laboratory course. The comments and suggestions obtained in this manner have been most helpful in instituting a laboratory course composed of: (*a*) introductory technique sessions, (*b*) student-conducted demonstrations, and (*c*) student seminar sessions. In the demonstrations the students take a pharmacological subject, as is done in the traditional laboratory exercise, and prepare a 1-hour demonstration as a visual aid for the rest of the class. The student demonstrations are carried out with finesse, as the result of practice, which commands the respect on the part of the student audience. The substitution of student-conducted demonstrations for the traditional laboratory exercise has resulted in a radical change in our students' attitude toward laboratory work. In the traditional exercises enthusiasm was seldom displayed by the students, while active participation in demonstrations has resulted in a gratifying improvement of interest.

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[1] A "cookbook" laboratory exercise refers to a pretested exercise in which the students follow a stepwise procedure presented to them in their laboratory manual.

METHODS

Technique sessions.—These laboratory sessions are used to introduce the students to the basic techniques most frequently employed in pharmacological experimental work, in order to reduce the amount of time spent in the preparation of their own demonstrations. In addition, this time is used by the first groups for the preparation of their demonstration.

Demonstration sessions.—Several factors contribute to the ultimate design of student demonstrations, e.g., size of class and staff, time, equipment, and space. Conditions which prevailed in this school and department appeared to be particularly amenable to this teaching technique. The maximal size of the sophomore class is 50 students.

There is a staff of four, including two faculty members assigned to the laboratory program. The pharmacology course consists of 3 hours of lecture and two 4-hour laboratory sessions per week for three-quarters of the school year. Space is limited; of the two laboratories available, the larger one can accommodate only 24 students conducting a "cookbook" laboratory exercise under crowded conditions, the other accommodating half this number. We are fortunate in having more than an adequate amount of standard pharmacological equipment available. However, a limited supply of dogs and cats in the past has put restrictions on the types of laboratory exercises which could be conducted by our students.

Twelve demonstration groups of four students each are formed from the class. The selection of subject matter by each group for its demonstration is made under the active guidance of a staff member in order to prevent the students from undertaking impractical or otherwise inadequate projects. For the first few demonstrations specific subjects are suggested to the students to orient them to a field amenable to demonstration at a time when their knowledge of pharmacology is limited.

The initial period of preparation is devoted to a library assignment designed for two purposes: (*a*) a review of the literature on the general subject and (*b*) a comprehensive review of specific methods, procedures, and doses to be employed in their demonstration. At this time the students learn what material is available, where to find it, and how to read critically while working on their own. Such an opportunity is not afforded students assigned to a laboratory exercise which has been worked out for them in detail.

After the introductory material has been compiled and the methods chosen, the group submits to the department an order for animals, drugs, supplies, and equipment required. Students make up their own drug solutions. (This proves to be educational, and occasionally embarrassing, when doses are miscalculated!) Once all of this material has been assembled, the group undertake practice sessions to familiarize themselves with the techniques and the results, or sometimes the lack of results, which may be anticipated.

The group prepares a written summary of the findings of the introductory literature search which is reproduced by the department and distributed to the student audience 1 week prior to the actual demonstration. This summary is designed to orient the audience with the subject of the demonstration. Each group practices its material at least 3 times prior to presenting it before the class, although occasionally a greater amount of time is required.

The presentation of the demonstration to the class begins with an introduction of about 20 minutes by one group member who discusses specifically at this time the methods, the nature of action of drugs to be employed, and the results expected.

The audience is then taken to the laboratory for the experimental procedure, which lasts about 1 hour. One group member acts as the "master of ceremonies," and he is responsible for holding the students' attention and seeing that the presentation goes along smoothly. The success or failure of a demonstration more frequently hinges upon the effectiveness of this member than upon the effectiveness of the demonstration procedure itself. The group works as a unit, but each group member is directly responsible for a part of the experimental procedure.

On returning to the conference room a recapitulation of the demonstration is conducted, complete with answers to pertinent questions from the audience. The remainder of this period consists of a student discussion of the general subject of the demon-

stration. For the most part the faculty does not participate, except when it is necessary to clear up any mistaken concepts which may occur. This last part of the demonstration is 20–40 minutes in length. Each demonstration is repeated a second time before another group of twelve students, so that half the class sees each demonstration.

To complete the demonstration assignment the student group is required to submit a final written report of its project, which is organized on the format of a scientific paper including: introduction, methods and material, results, discussion, summary, and pertinent bibliography. In the preparation of this report the students are instructed to indicate specifically the results which *they* obtained; if these results are at variance with those previously reported in the literature, possible explanations for these differences are to be included in the discussion. In other words, a concerted effort is made to impress the students with the necessity of accuracy and clarity of recording their results.

TABLE 1

GENERAL SUBJECT MATTER OF STUDENT DEMONSTRATIONS 1956–1958

During this period 34 demonstrations were conducted, with some repetition of subject matter.

1. Routes of Administration
2. Ganglionic Blocking Agents—Arfonad and Hexamethonium
3. Neuromuscular Blocking Agents—*d*-Tubocurarine and Succinylcholine
4. Cardiac Actions—Sympathomimetic Amines
5. Cardiac Actions of Representative Autonomic Drugs
6. Cardiac Actions of Digitoxin
7. Coronary Occlusion and Digitalis
8. Bioassay—Digitalis Leaf and Curare
9. Histamine and Antihistaminics
10. Analgesia—Morphine, Codeine, Aspirin, *N*-allyl-*nor*morphine
11. Premedication for Anesthesia
12. General Anesthesia
13. Local Anesthesia
14. Tranquilizing Agents
15. CNS Stimulants and Anticonvulsants
16. Barbiturate Poisoning
17. Poisoning by Common Household Substances
18. Acute and Chronic Heavy Metal Poisoning

Student seminar sessions.—By the time all groups have completed their demonstrations, the students are well enough grounded in pharmacology to enable each one to present a seminar. These are generally 20 minutes in length, followed by informal discussion, and are presented to only half the class.

RESULTS AND DISCUSSION

The results from the demonstrations as a teaching aid were beyond our expectations. A number of factors have contributed to make them successful.

The student-conducted demonstration, with the necessary background work and study, the experimentation, and the follow-up discussion, is an invaluable teaching session. To be most effective, proper timing in the selection of subject matter to be demonstrated is important. Greatest benefit is obtained if the general material on the subject of the demonstration has been previously covered in lecture and if the demonstration is conducted prior to the examination on the topic. There is an added impetus for success with the student-conducted demonstration, since the student is working not only for himself but also for and with his demonstration group to demonstrate the material to his classmates in a clear and orderly manner.

The subject matter covered by the student demonstrations is approximately equivalent to that covered in the past by a similar number of routine "cookbook" laboratory sessions in pharmacology. Frequently, a demonstration group masters and carries out the equivalent of several acute routine laboratory exercises in one session. A list of the general subjects covered in demonstrations during the years 1956–58 is presented in Table 1. The sequence followed in demonstrations closely adheres to

the lecture schedule. A few representative demonstrations will be considered:

1. Routes of administration: Albino mice were given injections of pentylenetetrazol by the intraperitoneal, intramuscular, intravenous, and subcutaneous routes. The time required for onset of convulsions was used as an indication of rate of absorption. Variations in doses by the various routes further demonstrated the degree of absorption. This type of experiment was also conducted with the use of barbiturate-induced anesthesia.

2. Ganglionic blocking agents: The short duration of action of Arfonad and its capacity to produce controlled hypotension, by intermittent injections or by continuous infusions, were demonstrated by blood pressure studies in the cat. The development of reactionary hemorrhage was also observed. With the use of hexamethonium, a long acting ganglionic blocking agent, the site of its action was demonstrated with the *in vivo* isolated superior cervical ganglion-nictitating membrane preparation of the cat. The development of orthostatic hypotension, by postural changes in the animal, was also observed.

3. Analgesia: In demonstrations on morphine, by standard techniques, a number of the actions of this drug were demonstrated. Tolerance to morphine in the rat was shown by gradually increasing the four-hour dose by 3 mg. until the rats were receiving 60 mg. per dose. On the day of demonstration the effects of a 65-mg. injection were compared in the tolerant and nontolerant animals, in which death resulted only in the nontolerant animals. This particular experiment was carried further by showing the marked excitement produced in these tolerant animals by the injection of *N*-allyl-*nor*morphine. Additional experiments conducted in this demonstration included the analgesic action of morphine when a modified D'Amour-Smith technique was used on the rat, the excitant actions demonstrated by the production of the Straub tail in the mouse, and delirium or mania in the cat. Sedation and depression of respiration were easily, yet significantly, demonstrated in the dog. In this same animal the antagonism between morphine and *N*-allyl-*nor*morphine made a very dramatic and lasting impression upon all those present.

4. Histamine and antihistaminics: Histamine and histamine liberators which were injected intradermally into the skin of the rabbit were shown to cause a local increase in capillary permeability as evidenced by the extra-vasation of intravenously administered trypan blue. The bronchoconstrictor action of histamine and the protective action of antihistaminics was demonstrated on either the intact guinea pig or the isolated perfused guinea pig lung. The sedative and convulsant actions of antihistaminics were demonstrated on mice.

In the remaining demonstrations similar standard pharmacological techniques, such as are used in routine laboratory courses, were employed.

In initiating a program of this type the cost in terms of time required by the students and staff and of the financial outlay for the department is of critical importance. It has been observed that the time expended by the students in these demonstrations is no greater than that expended in attending "cookbook" laboratory sessions, including the time required to write up such exercises. In instances when more time is spent on demonstrations, the students appear to feel that this time is well spent. On the other hand, complaints, such as are frequently experienced during the write-up of routine laboratory exercises, have not been received. This may result from the fact that the students, as individuals, are competing against themselves to do a good job.

Staff time required has been no greater than has been experienced in routine labora-

tory courses. According to the results of the course critique, the students want and expect close direct supervision during routine laboratory experiments, whereas during demonstrations they prefer to have the staff available for assistance only when requested.

The cost in terms of equipment is considerably reduced, since reduplication is unnecessary. Actually, more varied equipment may be made available to the students at less cost than would be required for the purchase of routine equipment for the average-size student laboratory course. Animal expenditures need not be greater than for the traditional laboratory course. One group may require several animals for a specific demonstration, but frequently these same animals may be used several times. Of further advantage is the fact that less laboratory space is required—two or three small laboratories are all that have been found necessary.

Student response to the student demonstration idea has been and is most encouraging. In reviewing the results of the course critiques over the past 5 years we have found that, out of approximately 250 students, only seven (2.8 per cent) felt that routine laboratories were very valuable, and 50 students (20 per cent) rated these laboratory exercises as being of little or no value. These findings were of interest because the routine laboratory courses in the past had been consistently successful from the point of view of the results obtained by the students. When the students were asked whether they believed that demonstrations could replace the student laboratory, of the 150 students who had not experienced the demonstration type of laboratory 124 (83 per cent) answered in the affirmative. After demonstrations were initiated the students' feelings about routine laboratory periods did not change, except now eleven students (11 per cent) felt that the demonstrations were of little or no value. This observation, however, should be qualified, for these same students were of the opinion that neither laboratory exercises nor demonstrations were of particular value. All the students (100 per cent) felt that their time spent in demonstrations was justifiable, whereas only 25 per cent indicated that routine laboratory time was justifiable.

During the first 3 years that critiques were used, and before demonstrations were initiated, more than 80 per cent of the students suggested demonstrations as a better alternative for laboratory work. Comments such as the following are typical: "After the student has learned to anesthetize animals and inject drugs he should be exposed to organized demonstrations. Good organized demonstrations would be of great benefit." "Several well planned experiments requiring more student participation would be highly desirable." "More demonstrations in small groups." As a result of suggestions like these, and following further conferences with the students, it was decided to try the student-conducted demonstrations in place of the "cookbook" laboratories.

The experience with demonstrations for 2 successive years has shown that the students are enthusiastic about the program. The comments received from the students are indicative of this interest: "Demonstrations give the student an opportunity for growth and individual participation as well as following a line of interest to a definitive ending." "The experience gained through searching literature, setting up an experimental procedure, using at least some semblance of an experimental technique, and analyzing the results obtained is invaluable in helping one attain a much needed critical outlook on the scientific literature." "Tremendous feeling of accomplishment, worth all the time spent."

In a critical appraisal of this method of

laboratory teaching some limitations have appeared which have been taken into consideration. The fact that all students in a group are not equally enthused about any one demonstration subject is somewhat of a limiting factor, but it does not seem to be any more of a limitation in this approach than in the routine laboratory exercise. Indeed, the selection of subject matter by the small demonstration groups themselves gives the desired freedom of action and the resultant responsibility essential for enthusiasm.

Frequently, students feel that they would rather be a member of the demonstration group than of the audience. However, without an audience there would be less enthusiasm and less of a feeling of accomplishment, which is a limiting factor in any form of demonstration, whether it is conducted by the staff or by the students. To decrease the significance of this factor, several steps have been taken: (*a*) the restriction of the length of any given demonstration; (*b*) the coordination of the subject matter of the demonstration with the lectures; (*c*) the insurance of competence on the part of the demonstrators to allow for a well conducted demonstration. To minimize possible boredom, it has been found advantageous to hold the introductory and summary discussions in a different room from that in which the animal experimentation is held.

As might be expected, in most cases the second demonstration conducted by a given group was more successful than the first. This was in part owing to the experience gained, and also because of the fact that after each demonstration slips of paper were passed out to the audience, upon which they expressed their opinions of the demonstrations and indicated how they thought the demonstrations might be improved. This self-criticism by the class soon leads to respect of fellow classmates, as far as the demonstrations are concerned, since all members of the audience sooner or later participate in a demonstration. Thus, the tone of the criticisms soon changes from that of "not clinical enough," even on heavy metal poisoning demonstrations, to constructive well meant criticisms.

An indication of the reaction of the student audience to the demonstrations can be obtained from the replies in the course critique in response to the question of whether demonstrations were worth while. The "yes" and "no" answers were 88 per cent in the affirmative, and these answers were qualified by statements as follows: "Generally useful, although possibly not as much as actual participation." "Depending on the group and the choice of the experiment, much was learned from most of the demonstrations." "Definitely, the important points about drugs used were usually reinforced by the demonstrations." "There is nothing better than seeing how a drug works." "Of little aid as little or no new knowledge beyond that in the textbook was gained."

CONCLUSIONS

Student-conducted demonstrations have been initiated by the pharmacology department to replace the routine laboratory course. This technique is a compromise between the "cookbook" exercises and the research project teaching methods employed in other universities. The demonstrations are centered around a pharmacological subject, as is done in the traditional laboratory exercise. After practice a group of four students present the subject to about twelve classmates at a time, as a visual aid to the learning process. The assignments are rotated so that each student participates in a demonstration and the audience sees and

discusses twelve different subjects during the course.

The following conditions, in order of their importance, were found to be necessary to have successful student demonstrations: (*a*) interest on the part of the students, (*b*) clear-cut and decisive experiments, (*c*) small demonstration groups, and (*d*) a small audience.

This method of utilization of laboratory time has resulted, on the part of the students, in the instillation of enthusiasm for and appreciation of the laboratory course in pharmacology.

The Elementary School in Medical Education

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A significant number of any doctor's patients will be school-age children. There are approximately 30,000,000 children of elementary school age in the United States at this time (7). In a study by the American Academy of Pediatrics in 1948 (2), it was found that 75 per cent of all children are cared for by general practitioners and that children under 15 constitute 25–30 per cent of their practices. This was also found to be true in the North Carolina study of general practice (6). In addition, there are few, if any, of the medical specialties that do not deal in a very significant way with school-age children.

General practitioners and specialists alike will serve school-age children best if, in addition to understanding the development and needs of children in this age period, they also understand the schools in which children spend a good share of each day. They must be able to understand the educational and learning processes, as well as the school situation and the teacher's classroom problems to make their medical information and planning understandable and functional for the child and the school.

The elementary school offers obvious field experience for observing and studying the development of the child in school.

THE FAMILY MEDICINE COURSE

In the Medical School of the University of California at Los Angeles, there has been a course in the sociology of medicine entitled "Family Medicine" since the first class was admitted in 1951. The details of this 4-year course were outlined in a publication in 1954 (4), and the major objectives of the course were restated in a recent article (5). Although the details of the course have been somewhat modified since then and are frequently being changed, basically it remains the same. The general procedure of the course is as follows:

In the first year of medical school each student is assigned a family in a city or county well baby clinic. During his first year he attends the well baby clinic once a month when the baby of this family is there. He also makes home visits and in this way develops a firm relationship with the family and a significant understanding of them. In addition, through the observation of the development of the infant the student gains some knowledge of the beginnings of the integration of man into society with or without medical problems. He continues to follow this family through the next 3 years he is in medical school by less frequent clinic visits and home visits. Some are seen in the University Hospital when they become ill, but this is not the major emphasis of this course.

In the second year in medical school each student is assigned a second family, this time from the University Nursery and Elementary School. It is this phase of the program that is the basis for this article. The University Nursery and Elementary School is a demonstration school located on the university campus and operated by the Department of Education of the university. The nursery school has about 40 students, ranging in age from 2½ years to 4 years, 9

* Assistant Professor of Pediatrics.

† Assistant Professor of Preventive Medicine and Public Health.

months. The elementary school extends from kindergarten through the sixth grade and has approximately 340 students.

The school has an excellent staff and is used for the training of student teachers. It is geared to handle observers. The major portion of the Family Medicine Course in the second year of medical training is carried on in this setting. The instructors are members of the Pediatric Department and the Division of Social Welfare of the Medical School. The pediatrician is also the physician for the University Nursery and Elementary School.

The class of 50 medical students is divided into four groups of twelve or thirteen students. Once each week one of these groups attends the elementary school for a 2-hour observation and discussion period. Thus, one group of students attends once every 4 weeks or about once a month. On these occasions they meet with the course instructors for planned observation and discussion.

In addition, each medical student is assigned one child to observe throughout the year. The student talks to the child's present teacher, his past teachers, the school nurse and others interested in the child, reviews all school records, and participates in one physical examination of this child. He also makes his own observations of the child in the classroom and on the playground and visits this child's home to get a general impression of the home environment.

Once every month the entire class convenes for a 1-hour conference. At this time one of the students presents to the group a report of the child he is following. Generally, these reports are chosen to illustrate educational or medical-educational problems. Present at the conference are various resource personnel from the community, as well as the University Elementary School counselor and the child's teacher. Table 1 indicates the classroom observations and conference discussions held during 1 year.

STUDENTS' EXPERIENCES IN THE COURSE

The use of the elementary school in medical education is somewhat unique, and there are not enough reported experiences to establish methods and criteria for evaluating the success or failure of such a program. The students' experiences can be examined, however, in terms of how they describe them in their written reports and in their discussions with the instructors.

It is to be expected that students will perceive the course and its value to them in the light of their own interests. A few find it difficult to relate their observations in the elementary school to other parts of their medical education. Most students, however, are able to enhance their total knowledge of children in this age group and increase their understanding of the significance of the school in the growth and development of children. They gain some understanding of elementary education and become aware of the importance of understanding the schools in the communities in which they will be practicing medicine.

At the end of his sophomore year one student reviewed the values he saw in the course and the questions it had provoked in his mind.

> The experience at University Elementary School has been both beneficial and enjoyable. First, it helps us as future physicians to understand the school's position in the community. Second, it helps us to see some of the problems both children and their families face in relation to the child's first organized social and intellectual test. The observing of teaching technique and its relationship to child behavior has raised many questions: those of the relationship of the organically handicapped child and the psychologically handicapped child to the school, for example. How do they fit in? What can the teacher or the school do about their problems? What contacts are there between the school and the physician?

In order to understand the impact of the school on the child and his family it is necessary to know something about what goes on in schools. One student, who followed the progress of his assigned child from kindergarten through second grade, describes the school program in these early years.

> The curriculum of kindergarten, Gary's present class, tries to meet the immediate needs of the growing child, not attempting specifically to prepare him for a following grade but rather to guide him in the transfer from home to school, helping the child to live within certain boundaries and to learn controls.

Group activity is encouraged.

Gary's intellectual development is high. He has the capacity for learning new things and is quite creative. He is well coordinated and able to do fine movements with his hands, such as using hammer and nails.

At the end of the following year the student reports:

Gary's adjustment from kindergarten to the first grade has been good but not perfectly smooth. The curriculum, with a more closely regulated program, the teaching of skills, of reading and number work, in addition to the social adjustment, has caused some resistance at times. Gary has resisted the authority of the teacher by acting smart-alecky on occasion, but this has not caused any serious problems, and his reaction to discipline is improving.

The following student report reveals an understanding of the relationship of child growth and development to the total school situation with respect to the handicapped child. It shows a recognition of the difficulties a child with a disfiguring and disabling handicap may encounter at home and at school. It also shows the ways in which this child compensated for his handicap.

Terry B. is an 8-year-old Caucasian male whom I first saw last year. At that time he was having difficulty in making an adjustment to his social group at school. His cleft palate and club feet had left him with emotional scars which he could not overcome. His mother has rejected him all his life, and there has been great sibling rivalry in the home. The only health problem which Terry has encountered this year was due to the fitting of a new upper denture which made his speech even more difficult to understand. He gradually became accustomed to the denture, however, and his speech improved.

Terry has always been good scholastically, and this seems to be a means of adjustment for him. This year he found a new outlet in reading, and he reads more

TABLE 1

A CORRELATION OF GROUP OBSERVATIONS, CLASS CONFERENCES, AND CASE ASSIGNMENTS LEADING TO A COMMON OBJECTIVE

Group observations*	Family assignments†	Class conferences‡
1. Oct.—Tour of the school & observation in the 6th grade.		Discussion of the basic educational philosophy of the school by the principal.
2. Nov.—Case assignment and review of school records.	Correlation of all the facets of the development and education of the nursery and elementary school child by independent observations of one child at school and at home and by discussions with the child's parents, his teacher, school counsellor, and school doctor and nurse.	Case presentation by 4th-yr. student: Sixth-grade child who is now making a good adjustment, but earlier had school problems. General discussion of value of several years follow-up of cases assigned.
3. Dec.—Individual classroom observation of assigned child.		Case presentation by 2d-yr. student: First-grade "problem" child with motor incoordination, unusual physique and perseveration of activity, yet bright and well accepted at home.
4. Jan.—Group observation in 1st grade.		Case presentation by 2d-yr. student: Short boy in 3d grade who has temper tantrums. Discussion of home and school management of this problem.
5. Feb.—Group observation of music instruction.		Case presentation by 2d-yr. student: A family of boys with a bleeding tendency. General discussion of the sociological management of school age children with bleeding disorders.
6. March—Group observation of reading instruction.		Case presentation by 2d-yr. student: Nursery school child blind due to retrolental fibroplasia. General discussion of education of the blind.
7. April—Individual physical examinations of children assigned, or classroom observation.		Case presentation by 2d-yr. student: Sixth-grade child with congenital deafness. General discussion of education of the deaf.
8. May—Individual physical examinations of children assigned, or classroom observation.	Written case report.	Review of the objectives of the course.

* A group consists of one-fourth of the class (twelve students), and each group observes once a month.

† Each medical student observes one child by independent observation at the school and by home visits.

‡ Conferences are held once a month for the entire class.

books a week in the classroom than any of the other pupils. The teacher has encouraged Terry in this, as she realizes his need to excell in order to maintain a feeling of self esteem.

Terry needs to have a close relationship to his teacher, partly because his relationship with his mother has not been close. Terry's social adjustment, his most difficult task, has improved over the past year, but is still his area of greatest need. He has made a marginal adjustment to the group, but still cannot be considered a member of the in-group. His overt aggression has been curbed to some extent, and he now strikes out only when he is teased directly.

That adequate understanding of the school situation and its relationship to child growth and development aids the medical management of the patient, is indicated by this quotation from discussion with a medical student in his senior year.

When one is talking with a parent about the illness of a school age child, whether he is hospitalized or being seen in the clinic, it seems inevitable that the subject of how the illness affects the child's school attendance, his relationships with his classmates, or some other aspect of the school situation, must be considered.

It is recognized that the preceding quotations have been selected to illustrate successful student experiences, but negative experiences are also revealed in student reports. A number of students find it tedious to study the normal even when they recognize its importance and pertinence to the other parts of their medical education. In a written critique of the course one student says:

I feel that a basic fault, from the student's point of view, which is inherent in this course, is that it just isn't very interesting. The reason for this is that it concerns the normal. Very few students in medicine are interested in the normal. It is as important to study the normal family as it is the normal anatomy. Most of our future practice will concern the normal family. But it still isn't interesting. It's old stuff; we've all known many families before.

Some students are unable to sustain interest in their assigned child because they become frustrated and resentful at their inability to relate to the child and his family in a functional way, since it is not possible for students to be meaningfully related to the family's medical care within the structure of the course.

The ratio of positive to negative learning experiences is not known, but expressions of the latter seem to be in the minority.

COMMENTS

There are few reported instances of the use of elementary school in medical education, although it may be more common than reports would indicate. Therefore, it is difficult to discuss this program in the light of reported experiences of others.

Deisher (3) reported the use of the public schools in the Seattle area in a medical education program. This consists of a carefully planned 1-day visit to an elementary school by senior medical students. The emphasis is primarily on the school health program and its integration into the school program. The students receive an excellent over-all review of the total school health program in operation in a public school. This is integrated with an outstanding pediatric program that emphasizes the care of the well child.

More recently, Boder (1) has described the use of a public school for the physically handicapped in a medical education program. Senior medical students attend the school for the physically handicapped for a carefully planned 1-day observation period. They observe on the playground and in the classroom and see several interesting cases demonstrated by physical examination. They also observe physical therapy and occupational therapy. This provides the medical students with an excellent opportunity, in a brief period of time, to see children with many types of handicaps functioning in a special school situation. This is an effective way to see rehabilitation in action.

Both programs differ from the program reported in this article in that senior students participate, and the orientation centers around the health program. In the program presented in this article the students are in their second year of medical school, and the orientation is more toward child development and the educational program

than toward the school health program. For several reasons this seems appropriate. It is a logical sequence to the study of the child and his family in the well baby clinic from the standpoint of child development, and it forms part of the 4-year continuum of the Family Medicine Course. Furthermore, it is felt that the specific medical and administrative aspects of a school health program could more easily be considered in the clinical years, particularly with the background information obtained from observing children in schools. The obvious opportunities to discuss medical problems and school health problems are not ignored. The education of handicapped children is both observed and discussed, as is indicated in Table 1. This table also indicates the way in which the various observations are integrated with the case studies to provide as complete a picture as possible of the child in the elementary school.

One can, of course, give the student a more complete presentation in 24 hours of teaching time spread out over an entire academic year than one can in a single 8-hour session. Whether this much teaching time for this subject matter is warranted or not is undoubtedly debatable. However, this knowledge about school age children and the schools they attend is important for every doctor regardless of his type of practice, as emphasized in the introduction to this article. In any event, this particular study of the school age child is an important and integral part of the Family Medicine Course which deals with the sociological aspects of medicine and disease.

There may be concern that this program is presented too early in the student's training, especially since the other reported programs deal with 4th-year medical students. This may be so. On the other hand, there seems to be a decreasing interest in the "normal" child as the student progresses in medical school. Furthermore, in this particular situation the case studies are the core of the program, and in a school situation a long-term observation is most valuable. Thus, the students who are assigned cases in the elementary school in their second year in medical school have opportunity for 3 years of observation.

Obviously, more experience is needed to determine the relative merits of different types of uses of the elementary school in medical education. However, it is important to emphasize the need for medical students to have some experience in elementary schools.

SUMMARY

It is important for every doctor to understand the development of the school-age child in society because, regardless of his type of practice, a significant number of his patients will be school-age children. The elementary school offers obvious field experience for observing and studying the development of the child and ultimately man in society.

The Family Medicine Course is designed as a 4-year program to help students in their ability to communicate with patients and develop a sound doctor-patient relationship through understanding the growth of man in society by means of family assignments. In the second year of this course each student is assigned a family at the University Nursery and Elementary School to be followed for the next 2 years. In addition to the family assignment, the students spend 2 hours a month in classroom observations and discussion periods. To insure interchange of information regarding interesting and especially significant family assignments, general class conferences are held once a month. It is this second year of the program that is the main focus of this report.

Students' reports and discussions indicate that they have gained some understanding of the child's social, mental, and physical development. In discussions they have commented on the usefulness of this knowledge and understanding in dealing with sick children and their parents on the wards and in the clinics. Although not all students found the course stimulating or interesting, the majority seemed to benefit

by it. No quantitative estimates of this were made.

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4. PARMELEE, A. H., and ADAMS, J. M. Objectives of the Family Medicine Course, J. Student A.M.A. (in press).
5. PARMELEE, A. H.; SWENGEL, E.; and ADAMS, J. M. The Family in Medical Education. Pediatrics, 14:387–95, 1954.
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69th Annual Meeting

of the

Association of American Medical Colleges

SHERATON HOTEL

PHILADELPHIA • PENNSYLVANIA

OCTOBER 13, 14, 15 • 1958

Information

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Hotel

It is important that requests for hotel reservations be made directly to the Sheraton Hotel in Philadelphia and not through Sheraton Hotels in other cities.

Your cooperation is requested in sharing a double room with another member if possible and in notifying the hotel to this effect.

Tickets for the Annual Dinner, Monday Evening, October 13, will be $8.00 and should be purchased at the time of registration.

Transportation

The Pennsylvania Railroad serves Philadelphia with direct service from Chicago, Washington, D.C., and New York. It provides almost hourly schedules from New York and Washington and maintains four trains per day from Chicago.

American Air Lines, TWA and United Air Lines all maintain direct service to Philadelphia from Chicago, New York and Washington, D.C.

United Air Lines flies direct service from San Francisco, Seattle and Portland. TWA flies non-stop from Los Angeles to Philadelphia.

Registration

DELAWARE VALLEY SUITE "A"–"B" (3rd floor)

The Registration Desk will be open as follows:

Saturday	October 11	9:00 A.M.– 3:00 P.M.
Sunday	October 12	9:00 A.M.–10:00 P.M.
Monday	October 13	8:00 A.M.– 7:00 P.M.
Tuesday	October 14	9:00 A.M.– 5:00 P.M.
Wednesday	October 15	9:00 A.M.–12:00 noon

Women's Activities

Information relative to the many interesting sight seeing trips in and around Philadelphia is available at the registration desk.

Pre-Conference Meetings

CLOSED MEETINGS

Friday, October 10 and Saturday, October 11. Meeting of the Medical School-Teaching Hospital Section of the Association—Hall of Flags, West (Lower Concourse). (Section members and Deans only.)

Saturday, October 11, 2:00–5:00 p.m. A meeting of the members of the Executive Council, deans of medical schools and representatives of governmental agencies—Ballroom East (2nd floor).

Sunday, October 12. The morning has been reserved for meetings of the several standing committees of the Association.

Sunday, October 12, 2:00 p.m. A meeting of the members of the Executive Council university presidents, medical vice-presidents, medical school deans and the deans or directors of the four graduate medical colleges that are members of the Association—Constitution Room (3rd floor).

OPEN MEETINGS

No public meetings will be scheduled for October 12.

Annual Reports of Standing Committees

Mimeographed copies of the annual reports of the standing committees of the Association will be provided at the time of registration. Open hearings on each of these reports will be held Monday, October 13, at 4:00 P.M.

Exhibits

Several examples of innovations and experiments in medical education will be shown.

Monday, October 13

BALLROOM (2ND FLOOR)

9:00 A.M. INTRODUCTION OF NEW DEANS AND SHORT BUSINESS MEETING

9:15 A.M. PRESIDENTIAL ADDRESS—"The Problem of Change"—Lowell T. Coggeshall

9:45 A.M. SYMPOSIUM: THE FIRST INSTITUTE ON CLINICAL TEACHING—George Packer Berry, Chairman

a) Julius B. Richmond, Chairman, AAMC First Institute on Clinical Teaching

b) Stewart G. Wolf, Jr., Chairman, Subcommittee on the Objectives of Clinical Teaching

c) Charles G. Child III, Chairman, Subcommittee on the Setting of Clinical Teaching

d) Charles A. Janeway, Chairman, Subcommittee on the Student, the Patient, and the Teacher

12:00 NOON LUNCH

2:00 P.M. *a*) "AMA and The Medical School Partnership"—Gunnar Gundersen, President, AMA

b) Panel—"Medical Education and the University"
James Conant, President Emeritus, Harvard University, Presiding
Deane Malott, President, Cornell University
Franklin D. Murphy, Chancellor, University of Kansas
James L. Morrill, President, University of Minnesota

4:00 P.M. OPEN HEARINGS ON ANNUAL REPORTS OF COMMITTEES

a) Audiovisual Education—Room 553

b) Continuation Education—Room 533

c) Financing Medical Education—Room 530

d) International Relations in Medical Education—Room 527

e) Internships, Residencies and Graduate Medical Education—Room 546

f) Licensure Problems—Room 556

g) Medical Care Plans—Connie Mack Room (3rd floor)

h) Medical Education for National Defense—Independence Room (3rd floor)

i) Public Information—Room 554

j) Research and Education—Room 548

k) Veterans Administration—Medical School Relationships—Room 547

7:00 P M ANNUAL DINNER OF THE ASSOCIATION—BALLROOM

a) Presentation of the Borden Award in the Medical Sciences for 1958—Vincent du Vigneaud, Chairman of the Committee on the Borden Award

b) Presentation of the Abraham Flexner Award for Outstanding Service to Medical Education—Rolf C. Syvertsen, Chairman of the Committee on the Flexner Award

c) First Alan Gregg Lecture—James Conant

Tuesday, October 14

PENNSYLVANIA ROOM (3RD FLOOR)

9:00 A.M.	BUSINESS MEETING
	Roll Call
	Introduction of foreign visitors
	Approval of Minutes of 1957 Meeting
	Voting on new members
	Report of Chairman of Executive Council—Lowell T. Coggeshall
	Report of Executive Director—Ward Darley
	Report of Secretary and Treasurer—Richard Young
	Report of Editor of Journal of Medical Education—John Bowers
	Report of Director of Research—Helen Gee
	Report of Director of Public Relations—Thomas Coleman
	Annual Report of Committees
	New Business
	Confirmation of time and place of 1960 and 1961 meetings
	Report of Nominating Committee
11:30 A.M.	ADDRESS—"The National Significance of Corporation Support of Medical Education"
	a) Chase Mellen, Executive Director, National Fund for Medical Education
	b) Devereux Josephs, Chairman of the Board, New York Life Insurance Company; Chairman, President's Commission, Education beyond the High School
12:15 P.M.	LUNCH
2:00 P.M.	*a*) "Graduate Medical Education in Europe"—Dr. Philip Sandblom, Professor of Surgery, University of Lund, Sweden
	b) "Effective and Reasonable Procedures for Analyzing and Reporting Medical College Costs"—Mr. A. J. Carroll, State University of New York, Syracuse
	c) "Agreements between Medical Schools and Non-University-Owned Hospitals—A Preliminary Report"—Dr. Wm. Frederick Norwood, College of Medical Evangelists, Loma Linda and Los Angeles
	d) "The New Stanford Curriculum"—Dr. Lyman M. Stowe, Stanford University
	e) "Interns, Residents and Fellows Look at Academic Careers: Highlights from a Survey of Postdoctoral Fellowships"—Dr. Arthur S. Cain, Jr., National Academy of Sciences, Washington, D.C.
3:15–3:30 P.M.	RECESS

Tuesday, October 14 (*continued*)

3:30 P.M. *f*) "An Experiment in Faculty Self-Evaluation"—Dr. Manson Meads, Bowman Gray School of Medicine

g) "The Dalhousie Postgraduate Program: An Experience in Continuing Medical Education"—Dr. Lea C. Steeves, Dalhousie University

Wednesday, October 15

BALLROOM

9:00 A.M. *a*) Preceptor Program:

1. "An Evaluation of the University of Wisconsin Preceptor Program"—Dr. Robert Parkin, Dr. Osler Peterson, Dr. John Bowers
2. "The Role of the Preceptor in the University of Wisconsin Preceptor Program"—Dr. Leslie Kindschi, Monroe Clinic, Monroe, Wisconsin
3. "Students' Attitudes toward Preceptor Programs"—Dr. Leon Rosenberg, Columbia-Presbyterian Hospital, New York

b) "A Long Term Experience with Joint Medical-Psychiatric Teaching"—Dr. L. W. Earley and Dr. Lucien A. Gregg, University of Pittsburgh

c) "A Method of Handling Professional Fees for a Full Time Medical Faculty"—Dr. George N. Aagaard, University of Washington

10:15–
10:30 A.M. RECESS

RESOLUTIONS*

INSTALLATION OF NEW OFFICERS

* All resolutions before being presented to the General Meeting must be submitted to the Executive Director not later than 8:30 P.M., Tuesday evening, October 14.

Papers Read by Title Only

A Plan for Full Utilization of the Private Hospital Affiliate in Clinical Medical Instruction . . . A Pilot Study—Angelo P. Angelides and Robert L. Evans, Jefferson Medical College

On Strengthening the Choice of Medicine as a Career—Philip M. Benjamin, Allegheny College

The Relative Roles of Television and Motion Pictures in Medical Education—Edward W. Bird, LCDR, MC, USN, National Naval Medical Center

A Program for Teaching the General and Specific Aspects of Psychiatry—Henry W. Brosin and L. W. Earley, University of Pittsburgh School of Medicine

Graduate Instruction in the Use of Laboratory Animals—Bennett J. Cohen, University of California School of Medicine, Los Angeles

The Medical Student's View of His Courses and His Future—Robert E. Coker, Jr., Kurt W. Back, Thomas G. Donnelly and Bernard S. Phillips, University of North Carolina School of Medicine

Manpower, Post Graduate Teaching and a Department of Medicine—E. Grey Dimond, University of Kansas School of Medicine

A Method of Teaching History Taking to Sophomore Medical Students Using Psychiatric Residents as Instructors—L. W. Earley, University of Pittsburgh School of Medicine

A Program for Teaching Junior Psychiatry with Special Emphasis on Interviewing Technique—L. W. Earley, Stanley Peal and Austin W. Bennett, University of Pittsburgh School of Medicine

Problem Areas in Teaching Third Year Medical Students—L. W. Earley, Stanley Peal and Austin W. Bennett, University of Pittsburgh School of Medicine

An Adjunctive Method for Teaching Psychotherapy—L. W. Earley, Ralph J. Coppola, Rex Pittenger and Edna Fitch, University of Pittsburgh School of Medicine

Teaching First Year Psychiatry from the Observation of Patients—Jacob E. Finesinger, Ephraim T. Lisansky and Jean M. Coyle, University of Maryland School of Medicine

Thirty Years' Experience with the Case Method of Teaching Pathology—Wiley D. Forbus, Duke University School of Medicine

Graduate Training Program for Workers in Residential Treatment Units—Genevieve W. Foster and J. Tarlton Morrow, Jr., University of Pittsburgh School of Medicine

A Curriculum Designed for the Unique Requirements of the 4th Year Medical Student—Count D. Gibson, Jr., Tufts University School of Medicine

Family Medicine—An Experimental Teaching Program at Harvard Medical School—Robert J. Haggerty and Charles A. Janeway, Harvard Medical School

Teaching in a Combined Staff Clinic—Isidore Levine, Leonard D. Fenninger and Lawrence E. Young, University of Rochester School of Medicine and Dentistry

Psychological Factors in Clerkship Grouping and Their Relationship to the Learning Process—Morton Levitt and Harrison Sadler, Wayne State University College of Medicine

An Experimental Approach to the Teaching of Human Ecology—Leon R. Lezer, University of Vermont School of Medicine

Broadening the Doctor's Responsibility for Patient Care—Arthur J. Linenthal, Harvard Medical School and Beatrice Phillips, Simmons College School of Social Work

Definition of, Source of and Method of Dealing with Anxieties and Resistances of Senior Medical Students—I. Floyd Mallott, L. W. Earley, Bernard Wattenmaker and William E. Lebeau, University of Pittsburgh School of Medicine

A Summer Institute on Medical Teaching—George E. Miller and Edwin F. Rosinski, University of Buffalo School of Medicine

An Integrated Teaching Program in Child Psychiatry—L. W. Earley, J. Tarlton Morrow, Jr., William F. Finzer and John B. Reinhart, University of Pittsburgh School of Medicine

Experimental Design in a Basic Medical Science Laboratory Course—Lloyd D. Partridge, Yale University School of Medicine

A Teaching Program for Senior Medical Students in a Psychosomatic Clinic—Rex D. Pittenger, Ralph J. Coppola, Edna Fitch and L. W. Earley, University of Pittsburgh School of Medicine

A Critique of Panel Conferences in the Medical Curriculum—John C. Rose and Bruce I. Shnider, Georgetown University School of Medicine

An Experiment in Surgical-Psychiatric Teaching—Chester B. Rosoff and Thomas F. Dwyer, Harvard Medical School

A Program for the Teaching of Medical Aspects of Highway Safety in Medical Schools—David B. Sheldon, University of California School of Medicine, Los Angeles

An Experiment in Correlative Teaching—Dietrich C. Smith and Charles Van Buskirk, University of Maryland School of Medicine

Experiences with a Full Fifty Week Program in the Senior Year—R. L. Pullen, University of Missouri School of Medicine, and W. A. Sodeman, Jefferson Medical College

A Liberal Arts–Medical Curriculum at Boston University—Lamar Soutter, J. Philip Mason, Richard M. Millard and Donald I. Patt, Boston University

Construction of a Final Examination in Clinical Psychiatry—Robert J. Stoller and Robert H. Geertsma, University of California School of Medicine, Los Angeles

Family Physicians, University Consultants and Students: Their Relationships in the Process of Medical Education—Kerr L. White, T. Franklin Williams, Leon P. Andrews and William L. Fleming, University of North Carolina School of Medicine

Joint Teaching Efforts in the Undergraduate Program of the Departments of Pediatrics and the Division of Child Psychiatry—Henry H. Work, University of California School of Medicine, Los Angeles

AAMC First Institute on Clinical Teaching

SWAMPSCOTT, MASSACHUSETTS

OCTOBER 7 TO 11, 1958

Tuesday, October 7

6:00–8:00 P.M. DINNER

7:30–8:00 P.M. ORIENTATION SESSION, *Colonial Room*

Discussion group chairmen, recorders and secretaries will convene with subcommittee chairmen for briefing

8:00 P.M. INFORMAL RECEPTION, *Library*

Wednesday, October 8

9:00 A.M. GENERAL SESSION, *Ball Room*

Introduction to 1958 Institute—Dr. Julius B. Richmond, Chairman, Planning Committee

Topic I—Objectives of Clinical Teaching—Dr. Stewart G. Wolf, Jr., Chairman

Introduction—Dr. Wolf

Varieties of Emphasis in Objectives

"The Case for Emphasis on the Practical and Encyclopedic"—Dr. Edgar Hull, Associate Dean and Professor of Medicine, Louisiana State University School of Medicine

"The Case for Emphasis on Social Forces and Environment"—Dr. Henry Bakst, Professor and Chairman of the Department of Preventive Medicine, Boston University School of Medicine

"The Case for Emphasis on Scientific Method"—Dr. Carl Alfred Moyer, Professor and Head of the Department of Surgery, Washington University School of Medicine, St. Louis

10:00–10:15 A.M. COFFEE BREAK and adjournment to designated rooms for discussion groups

10:15–12:15 P.M. DISCUSSION GROUPS ON TOPIC I

12:15–2:00 P.M. LUNCHEON

2:00 P.M. GENERAL SESSION, *Ball Room*

Topic I—Objectives of Clinical Teaching (*continued*)

"The Science, the Art and the Heart: A Synthesis of Objectives in Clinical Teaching"—Dr. Dana W. Atchley, Emeritus Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons

Wednesday, October 8 (*continued*)

2:30–2:45 P.M.	RECESS and adjournment to designated rooms for discussion groups
2:45–5:00 P.M.	DISCUSSION GROUPS ON TOPIC I
6:00–8:30 P.M.	DINNER
8:30 P.M.	GENERAL SESSION, *Ball Room*
	Extramural Forces Influencing Medical Education
	Moderator: Lowell T. Coggeshall, President, AAMC
	"A Philosopher Looks at Medicine"—Dr. Charles Frankel, Professor of Philosophy, Columbia University
	"An Economist Looks at Medicine"—Dr. Seymour Harris, Professor and Chairman of the Department of Economics, Harvard University
	"A Behavioral Scientist Looks at Medicine"—Dr. Ralph W. Tyler, Director, Center for Advanced Study in the Behavioral Sciences
	DISCUSSION FROM THE FLOOR

Thursday, October 9

9:00 A.M.	GENERAL SESSION, *Ball Room*
	Announcements
	Topic II—The Setting of Clinical Teaching—Dr. Charles G. Child, III, Chairman
	"Medical Service in a Teaching Hospital"—Dr. Child
9:35–9:50 A.M.	COFFEE BREAK and adjournment to designated rooms for discussion groups
9:50–12:15 P.M.	DISCUSSION GROUPS ON TOPIC II
12:15–2:00 P.M.	LUNCHEON
2:00 P.M.	GENERAL SESSION, *Ball Room*
	Topic II—The Setting of Clinical Teaching (*continued*)
	"Relationship of a University to a Teaching Hospital"—Quigg Newton, President and Professor of Law, University of Colorado
	"Hospitals and Clinical Teaching"—Dr. Cecil G. Sheps, Beth Israel Hospital, Boston
2:30–2:45 P.M.	RECESS and adjournment to designated rooms for discussion groups
2:45–5:00 P.M.	DISCUSSION GROUPS ON TOPIC II
6:00–8:30 P.M.	DINNER

Friday, October 10

9:00 A.M. GENERAL SESSION, *Ball Room*

Topic III—The Student, the Patient and the Teacher—Dr. Charles A. Janeway, Chairman

Introduction—Dr. Janeway

"The Clinical Teacher—Scholarship as the Heart of the Educational Process"—Dr. Donald W. Seldin, Professor and Chairman of the Department of Internal Medicine, Southwestern Medical School, University of Texas

"Student Participation in the Teaching Process"—Dr. Charles A. Janeway, Professor of Pediatrics, Harvard Medical School

"Patient Care as a Social Process"—Dr. Thomas H. Holmes, Associate Professor of Psychiatry, University of Washington School of Medicine

9:45–10:00 A.M. COFFEE BREAK and adjournment to designated rooms for discussion groups

10:00–12:15 P.M. DISCUSSION GROUPS ON TOPIC III

12:15–2:00 P.M. LUNCHEON

2:00 P.M. GENERAL SESSION, *Ball Room*

Topic III—The Student, the Patient and the Teacher (*continued*)

"Clinical Teaching in the European System of Medical Education"—Professor Philip Sandblom, Chancellor and Professor of Surgery, University of Lund, Sweden

2:30–2:45 P.M. RECESS and adjournment to designated rooms for discussion groups

2:45–5:00 P.M. DISCUSSION GROUPS ON TOPIC III

6:00–8:30 P.M. DINNER

Saturday, October 11

9:00 A.M. GENERAL SESSION, *Ball Room*

SUMMARY

Dr. Julius B. Richmond, Chairman, 1958 Institute

Dr. Stewart G. Wolf, Jr., Chairman, Topic I

Dr. Charles G. Child, III, Chairman, Topic II

Dr. Charles A. Janeway, Chairman, Topic III

DISCUSSION FROM THE FLOOR

ABSTRACTS

69th Annual Meeting of the Association of American Medical Colleges Philadelphia, Pa., October 13–15, 1958

A PLAN FOR FULL UTILIZATION OF THE PRIVATE HOSPITAL AFFILIATE IN CLINICAL MEDICINE INSTRUCTION: A PILOT STUDY.

ANGELO P. ANGELIDES and ROBERT L. EVANS. (Dept. of Medicine, Jefferson Medical College, and The Lankenau Hospital, Philadelphia, Pa.)

A pilot study to fully utilize the medical services of a private hospital affiliated with a medical school for the clinical instruction of third-year students has been devised and money obtained from a foundation for implementation of the study.

The plan provides very close individual attention by half-time instructors. Once a week each student will have a 2-hour session with an instructor dealing in detail with history taking, performance of a complete physical examination, differential diagnosis, and pathophysiologic principles.

This type of tutorial instruction is the most important aspect of this study and is necessary to familiarize and make proficient the student in the "tools of medicine" which, in the authors' opinion, the present-day philosophy of letting the student shift for himself does not adequately provide.

Details pertaining to the selection of topics and student participation in the subspecialty rounds and staff conferences, assignment of all patients (90 per cent private), suggested reading lists, and laboratory facilities will be presented.

The value and role of a well organized private hospital in this type of clinical instruction, the staff attitude toward the program, and the adaptation of the available staff functions to the clinical clerk's teaching program will be discussed.

ON STRENGTHENING THE CHOICE OF MEDICINE AS A CAREER.

PHILIP M. BENJAMIN. (Allegheny College, Meadville, Pa.)

In the past decade, faculty premedical advisory committees have strengthened the effectiveness of their guidance of premedical undergraduates by following the recommendations of Severinghaus, Carmen, and Cadbury, but there still remain problems worthy of mutual consideration between medical colleges and the undergraduate schools, solutions of which would be mutually beneficial.

Guided by the annual publication of *Admission Requirements of American Medical Colleges*, faculty committees attempt to devise a curriculum which will give the student an integrated sequence of science prerequisites with no overload of laboratory assignments, a supplementary schedule of graduation requirements in general education, and as liberal as possible a choice of electives to complete the hour-requirements. Such a program relieves the inevitable feeling of pressure and over-specialization and frequently makes it possible for the faculty committee to recommend to an underclassman, if his achievement is not promising on the basis of his first 2 years' work in science, that he consider other career opportunities.

The administration of the Medical College Admission Test in May of the junior year, and the custom of filing applications to medical college early in the senior year, however, generally force the major portion of the premedical program into the first 3 academic years, since the majority of acceptances on the basis of test scores and academic grades are made before the end of the first semester, senior year. This creates two undesirable results. First: the entering freshman undergraduate has little time to make up his mind to study medicine if he has not already made his decision. Second: the senior often hits an academic slump and a marked decline in his interest in the study of medicine during his last year, once the tensions of the Admission Test, application, and acceptance are over.

Allegheny College proposes a solution to the second condition by offering a course in the history of medicine and medical education, hoping to sustain the senior's interest in medicine by challenging his participation in a survey of medicine where, in seminar fashion, he can relate his entire liberal arts program to an integration of events and achievements in the worlds of science, politics and humanities from the times of Vesalius to the present.

THE RELATIVE ROLES OF TELEVISION AND MOTION PICTURES IN MEDICAL EDUCATION. RICHARD W. BIRD. (National Naval Medical Center, Bethesda 14, Md.)

The National Naval Medical Center is carrying out a long-range study to determine the proper role and practicality of television as an instructional tool within a teaching medical center. A major problem in the evaluation of television is the necessary comparison of the use of television to the use of motion picture film. Problems arise in this comparison when people try to consider them either as opposing instructional devices, or as identical devices. Anyone considering the use of television within the medical teaching center should be fully aware of both the problems and potentials of motion pictures as well as television. There is a considerable degree of confusion, ignorance, and prejudice in some of the current assessments of the relative roles of television and motion pictures. Erroneous arguments are being advanced by those seeking to justify the television system as a motion picture studio. On the other hand, the motion picture enthusiasts are belittling the value of television in medical instruction on the basis of the superficial observation that film picture quality is vastly superior to the television picture quality. Several valid guide lines are becoming evident at the Naval Medical Center for assessing the relative roles of television and motion pictures in medical education.

GRADUATE INSTRUCTION IN THE USE OF LABORATORY ANIMALS. BENNETT J. COHEN. (Department of Physiology, University of California School of Medicine, Los Angeles, Calif.)

Most graduate students in the medical sciences complete their graduate education with inadequate facility in the use of laboratory animals. They are expected to gain perspective regarding animal experimentation and familiarity with animal handling, management, and care by trial and error "on the job." Frequently their experience and their exposure to animals are limited to the species in which their advisors happen to be interested and, in their courses, to specific experimental techniques. Consequently, many students are unaware that notable progress has been made in laboratory animal medicine within the past decade. They fail to realize that much new information has become available which will simplify their use of animals during their professional careers.

A course entitled "Methods and Techniques in the Use of Laboratory Animals" now is offered in the Department of Physiology at the U.C.L.A. School of Medicine, designed to provide new graduate students in the basic medical sciences with suitable orientation. Audit by technical staff is also

permitted. Students are introduced to the history of animal experimentation, and to the characteristics and husbandry requirements of the laboratory species. Proper handling techniques, inoculation, and dosing procedures are practiced. Species stability for particular types of research is discussed. Students become familiar with the growing literature about laboratory animal care. Faculty members, expert with particular species, are invited to participate in the weekly laboratory sessions. By this means, some duplication in other advanced courses has been eliminated.

MANPOWER, POSTGRADUATE TEACHING, AND A DEPARTMENT OF MEDICINE. E. GREY DIMOND. (Department of Medicine, University of Kansas Medical School, Kansas City, Kan.)

In the past decade, a new responsibility has been increasingly assumed by medical schools. This is the area of postgraduate education. Traditionally, the medical school faculty has assumed as its limit of responsibility instruction of the undergraduate medical student, interns, residents, and fellows. Instruction for the practicing physician was through special society programs, trips abroad, and at a few recognized centers in the U.S.A. Medical schools have now entered this area, some hesitantly and reluctantly, others with a vigor almost equal to that devoted to the undergraduate program.

At Kansas, such a vigorous program has been heavily supported by the faculty, and it is the purpose of this paper to define the actual working burden placed on the staff of a major "core" department, the Department of Medicine.

The relative cost of such a program, to a medical school's Department of Medicine in terms of manpower, hours, duties, travel, etc., will be described, with data accumulated over the past 8 years.

In this 8 years, this Department has participated in 165 formally organized courses varying in length from 1 day to 1 week, with a total of 16,398 enrollees.

In the academic year 1957–1958 alone, 400 actual hours of instruction were given by the full-time Medicine staff through the University's Postgraduate Medicine Division. This is exclusive of program preparation, actual supervision, and travel. The burden of such a program in terms of adequate staffing and maintenance of the undergraduate program will be described and, in turn, the advantages gained.

A METHOD OF TEACHING HISTORY TAKING TO SOPHOMORE MEDICAL STUDENTS USING PSYCHIATRIC RESIDENTS AS INSTRUCTORS. L. W. EARLEY. (Dept. of Psychiatry, University of Pittsburgh School of Medicine, and The Western Psychiatric Institute and Clinic, Pittsburgh, Pa.)

A method in use for 4 years at the University of Pittsburgh Medical School for introducing sophomore medical students to medical history taking is described. Second- and third-year psychiatric residents with the common background in history taking of having received basic training from the instructor in charge of the course, act as instructors for groups of eight or nine students.

The course, consisting of nine to ten 1½–2-hour sessions, is divided into one introductory session outlining the goals of, the method of, and the problems of history taking, three or four demonstration interviews by the instructor of patients from the medical service of a veterans' hospital, and four or five interviews before the group by students who volunteer. Each session is followed by a discussion-critique of what went on in the interview, what problems were met, how these were dealt with, how they might have been dealt with in other ways. Stress is laid on developing the latent observational powers of the students, showing them ways in which their notations of patients' behavior can be used in helping obtain the elements of a clear, coherent history and how their material needs to be written up.

Included are statements on the positive value of using residents as instructors, the place of the course as introductory to further courses in the third and fourth years and the opportunity this gives for continued assessment of the value of the course, reasons for use of medical rather than psychiatric patients, and the use of this method for practical introduction to the meanings of doctor-patient relations.

AN ADJUNCTIVE METHOD FOR TEACHING PSYCHOTHERAPY. L. W. EARLEY, RALPH J. COPPOLA, REX PITTENGER, and EDNA FITCH. (University of Pittsburgh School of Medicine, Dept. of Psychiatry, Western Psychiatric Institute and Clinic, and The Staunton Clinic, Pittsburgh, Pa.)

A class method for broadening and deepening the understanding of senior medical students for problems met in all forms of psychotherapy is described. The classes consist of fourteen senior students in charge of a senior member of the department of psychiatry. Nine 1½-hour weekly sessions, at each of which a psychiatric resident presents detailed reports of actual transactions taking place between himself and a patient over periods of from a few weeks to a year, forms the teaching substance of the course. Patients presented are all in the first instance referred by physicians in practice, a high percentage are psychosomatic problems, and all present problems of general medical care. The setting of the course is a psychosomatic clinic, and the students are all simultaneously acting as clerks in this clinic as well as in various general medical and medical specialty clinics which are geographically contiguous with the psychosomatic clinic. These factors make it possible to lay stress on the common psychological problems all physicians meet, present various means of handling these, and demonstrate successes as well as failure in treatment at many different levels.

The Socratic teaching method permits students to learn the elements of physicians' affective involvements with patients, discuss ways of predicting patients' behavior with data available for checking predictions, learn rational therapeutic goals, and find a reasonably non-stressful sounding board for their own fantasies of what a doctor's job is. The value of the dilution of the student's more immediate involvements with his own patients he is carrying in psychotherapy is discussed.

A LONG-TERM EXPERIENCE WITH JOINT MEDICAL-PSYCHIATRIC TEACHING. L. W. EARLEY and LUCIEN A. GREGG. (University of Pittsburgh School of Medicine, Dept. of Psychiatry, Western Psychiatric Institute and Clinic, Pittsburgh, Pa.)

A joint clinical conference teaching experience of a psychiatrist and an internist, continued over a 6-year period, is described. The relevant history of development of the methodology of teaching, a critique of the method as a learning experience for seniors and juniors, and the relation of the teaching to problems of general practice form the general framework for the presentation. Specifically described are the setting of the conference, place in the medical curriculum, choice of patients for presentation, method of student participation, methodology of interviews of patients, with special emphasis on the "folk" and social aspects of medical practice, problems presented in discussion, and methods for assessing the effect of the experience on students, interns, and residents.

The basic attitudes of the two teachers as they relate to the impact of the teaching are discussed at length. Consistent willingness to deal with disposition of the patients, agreement on the vacuity of the question "Is it organic or psychic," consistent noncompetitiveness between psychiatrist and internist and lack of prestige fights, maintenance of a position that neither person is brought in as a consultant, consistent stress on non-exposure of student's ignorance, combined stress on what constitute the facts

obtainable by history-taking and how to put facts together, and the general lack of disintegrating factors are singled out for more extensive comment. A particular discussion of the so-called problem of dual identification on the part of the student between psychiatry and internal medicine is included.

AN INTEGRATED TEACHING PROGRAM IN CHILD PSYCHIATRY.

L. W. EARLEY, J. TARLTON MORROW, JR., WILLIAM F. FINZER, and JOHN B. REINHART. (Depts. of Psychiatry and Pediatrics, University of Pittsburgh; Western Psychiatric Inst.; Pittsburgh Child Guidance Center; and Children's Hospital of Pittsburgh, Pittsburgh, Pa.)

A significant current problem of teaching child psychiatry in medical schools is how to integrate the subject matter and child psychiatry faculty members with the overall psychiatric, and to some extent pediatric, teaching programs. Presented here is a plan to meet this problem. It is designed to complement and supplement the didactic and clinical program of the Department of Psychiatry. It places special emphasis upon several important areas:

1. The interaction between parent and child as a powerful force in sickness and health.

2. The interwoven nature of physiological and psychological development as a continuously developing process.

3. The psychopathology of childhood in terms of developmental stages and characteristic psychological patterns.

4. (*a*) The special techniques of interviewing with a parent who is personally involved and yet does not ask help for himself. (*b*) The special techniques of interviewing a child.

These aims are supported by the following aspects of the teaching method:

1. Distribution of the program through the four years.

2. Didactic lectures series: First Year, Human Growth and Development; Second Year, Adaption From Infancy to Senility; Third Year, Clinical Child Psychiatry.

3. Clinical Experience:

(*a*) Third Year: Introduction to child psychiatry facilities; and prolonged study of parent-child interaction in a child health unit and nursery school with Department of Pediatrics.

(*b*) Fourth Year: Observation of interviewing techniques with children and parents as demonstrated by child psychiatrist; and student participation in supervised interviewing. Emphasis is placed upon diagnosis and techniques which can be applied appropriately by the general practitioner or any physician dealing with children.

We believe that this program is very well integrated, sound in concept, satisfactory in method and, of course, short in time.

A PROGRAM FOR TEACHING JUNIOR PSYCHIATRY WITH SPECIAL EMPHASIS ON INTERVIEWING TECHNIQUE.

L. W. EARLEY, STANLEY PEAL, and AUSTIN W. BENNETT. (University of Pittsburgh School of Medicine, Dept. of Psychiatry, and The Western Psychiatric Institute and Clinic, Pittsburgh, Pa.)

The skeleton of a general framework for teaching psychiatry to junior medical students is sketched. Within this framework particular stress is laid in this presentation on relations of this teaching to general clinical teaching at this level, orientation of the student to hospital facilities and personnel, relations of the student to other groups in a hospital such as Social Service, Psychology, Occupational Therapy, and on relevant physical therapies especially as these relate to basic science teaching and clinical medicine as a whole. The special aspect of the program which is described in most detail is that which relates to learning interviewing and history-taking technique from experience with (1) a single patient seen for seven or eight 1–1½-hour sessions over a 3-week period, (2) mutual exchange and criticism of other students' semi-impromptu presentations of their interview

material, (3) write-ups and criticism of histories by the residents, (4) demonstration interviews by senior staff members of patients hard to interview, (5) write-ups of these cases with stress laid on coherence, sequence, and economy of presentation and in careful observation of and documentation of patients' behavior. Here stress on the relation of physical description to psychological dynamics is considered most important; (6) finally, full-time availability of two senior staff members for discussion of history taking probems.

PROBLEM AREAS IN TEACHING THIRD-YEAR MEDICAL STUDENTS. L. W. EARLEY, STANLEY PEAL, and AUSTIN W. BENNETT. (Dept. of Psychiatry, University of Pittsburgh School of Medicine, and The Western Psychiatric Institute and Clinic, Pittsburgh, Pa.)

Junior medical students on an in-patient psychiatric service act and express the problems of their stage of training in characteristic patterns that are predictable, subject to analysis, and useful for teaching. A number of these problems are analyzed as to the ways in which they are stated by students, the superficial meanings of the conflicts revealed, possible deeper meanings of the conflicts, and possible methods of solution which emphasize educative efforts rather than psychotherapeutic goals. These problems include failures of students to do adequate physical examinations, statements by the students that they would like to see a greater variety of cases, problems of status as student, feelings on the part of students that the effective elements of medical treatment involve becoming a personal friend to the patient, how much socialization with patients should the student engage in, misconceptions of how patients come to be admitted to a mental hospital, problems which arise when a student feels he is doing things differently from his peers, feelings on the part of students that they may harm patients, the students' statement that they don't know what to do when they have finished taking a history, what one should do with an overly aggressive patient, should a student use previous write-ups before seeing a patient, what does a student do when he receives conflicting advice from various physicians about a patient, when does treatment start, what is a student's "job."

The discussion and suggested methods for dealing with these problems stress their commonality with all medical teaching.

GRADUATE TRAINING PROGRAM FOR WORKERS IN RESIDENTIAL TREATMENT UNITS. GENEVIEVE W. FOSTER and J. TARLTON MORROW, JR. (Department of Psychiatry, School of Medicine, University of Pittsburgh, and Western Psychiatric Inst. and Clinic, Pittsburgh, Pa.)

With the recognition less than two decades ago of psychotic reactions in children, treatment units for the care of these children have developed rapidly. With this growth the need for a new category of professional worker in the medical team has become evident. This category consists of child care workers who are specially trained to create the residential or day-care milieu, in hospitals and other treatment settings, as an essential part of psychiatric treatment. One of the several aims of the Graduate Program in Child Development and Child Care of the University of Pittsburgh is to furnish such specialized training.

This program, leading to the degree of Master of Science, is sponsored jointly by the Graduate School and the Department of Psychiatry of the School of Medicine. It is available to college graduates with previous experience in psychology, sociology, social work, education, nursing, or other disciplines traditionally dealing with children. Students specializing in child care take basic didactic courses in the development of the normal child, in the familial and cultural factors in this development, in elementary and advanced psychopathology, and in methods of observation, of interviewing parents, and of understanding test results and case histories. Combined with this is

actual experience in the handling first of normal and then of deeply disturbed children. The facilities of the Arsenal Family and Children's Center for normal children, and of the Children's Residential Treatment Service of the Western Psychiatric Institute, are available for the training of students. The course can be completed in 15 months of full-time work.

TEACHING IN A COMBINED STAFF CLINIC. ISIDORE LEVINE, LEONARD D. FENNINGER, and LAWRENCE E. YOUNG. (Dept. of Medicine, The University of Rochester School of Medicine and Dentistry, Rochester, New York)

The Combined Staff Clinic was conceived, organized, and initiated as an outgrowth of the study of the teaching curriculum. It is the first step in a comprehensive care and teaching program of the Department of Preventive Medicine.

The Combined Clinic clerkship allows each student, guided by his instructor, to examine and follow a group of ambulatory patients throughout the senior year. The objective of this long-term, supervised experience is to provide a setting in which the student can observe something of the natural history of disease and to appreciate his role in the doctor-patient relationship.

Each student spends an assigned half-day a week in this clinic throughout the entire senior year. The day of the week and the office are always the same. He sees a new patient every other week and on alternate weeks, his follow-up patients. An instructor, a member of the Department of Medicine, is assigned to each student for a full semester, at the end of which another instructor is assigned for the remaining semester. The patients remain with the student for the entire year.

At each clinic session, there are in attendance surgical, psychiatric, and gynecological teaching consultants. Specialty clinics provide advice in diagnosis and treatment. The students are instructed to retain the general supervision of their patient.

PSYCHOLOGICAL FACTORS IN CLERKSHIP GROUPING AND THEIR RELATIONSHIP TO THE LEARNING PROCESS. MORTON LEVITT and HARRISON SADLER. (Dept. of Psychiatry, Wayne State University College of Medicine, Detroit, Mich.)

This paper is an outgrowth of studies on the nature of group living as it relates to the learning process. While working with clerkship groups, the authors became convinced that the emotional relationships that existed between various members of the group could either detract from or enhance the learning process. Further observation confirmed the fact that these groups tended to take on the characteristics of a family unit with each of the participants playing a particular role. Additionally, the instructional staff reacted to each group constellation in a fashion consistent with individual group expectations. The authors discuss (1) the psychology of the group, (2) its relationship to the learning process, and (3) methods of utilizing group reactions to implement the learning process.

AN EXPERIMENTAL APPROACH TO THE TEACHING OF HUMAN ECOLOGY. LEON R. LEZER. (Dept. of Preventive Medicine, University of Vermont, Burlington, Vt.)

In an era in which medical education is under serious study, the place of the social sciences in medical education (and for that matter in medical practice) is under sharp scrutiny. The science of ecology, as applied to the human, certainly must have a place in the medical curriculum, if there is to be perception on the part of the future physician as to the importance of total environmental factors affecting the organism.

Not only do questions of subject matter require attention, but, even more importantly, does timing in presentation to the student require serious consideration. With the advent of the holistic approach to medical education and medical practice, it is extremely important that during the early years of medical education students have an

opportunity to think of the whole as well as the essential detail of the many parts and parts of the parts.

The first year of medicine is an opportune time to introduce the concept of the whole person, both as the individual affects the family and as the family affects the individual. This likewise must be carried beyond the biological unit to the community in which the individual and his family live. In a very real sense, ecological factors as they affect the human organism are at play here both in terms of health and disease.

It seems advisable to introduce social factors in health and disease during the first year or two in which the student is heavily involved in understanding in minute detail structure and function of the body. Here is the opportunity to point up the fact that the physician treats the body but that the body itself is not a personality.

By use of a cadaver history, a course in human ecology sharply brings attention to the importance of whole person understanding. After a series of orientation lectures as to the meaning of human ecology, students are scheduled for dissection table for two 2-hour seminar periods in which the ecology of their particular cadavers is discussed. This is based on the life history of that individual. This procedure has served to bring into play in the early years of medical education the importance of total consideration of the individual in the practice of medicine. Contrary to some fears, particularly on the part of some psychiatrists, this approach to the teaching of human ecology has not produced emotional trauma in the students. On the contrary, it has helped many students to think through their own personal problems, beliefs, and attitudes with respect to dealing with individual problems, both on the part of the future patient and on the part of the future physician.

Not the least important is the fact that the human ecology course provides the opportunity for such paramedical personnel as a medical sociologist, a medical social worker, and a health educator to bring their contributions into sharp focus in the whole area of medical education. Likewise, it provides an opportunity for the physician on the team to work with teachers in medical education other than his own colleagues in medicine. It provides the opportunity to discuss and discover the various roles of social science and paramedical personnel in medical education. It stresses the importance of liberal education as applied to the practice of medicine.

This approach has been used at the University of Vermont College of Medicine for the past 2 years. We wait with much anticipation for the present second-year class to reach the clinical years of teaching in order to more fully evaluate differences between this class and classes which have not had this content of preventive medicine teaching from the beginning. Currently, evaluations are being made of all four classes so that we shall have adequate criteria on which to make specific statements with respect to attitudes and approaches of medical students without the holistic or comprehensive approach and medical students who have had opportunity to receive their education in a comprehensive setting, including human ecology introduced in the first year of medicine and followed through each successive year by active participation of preventive medicine teaching in various spheres of the total medical education process.

In this clinical environment, the student gains knowledge of those community resources which contribute to the care of his patient. This clinic provides an excellent milieu for the teaching of preventive medicine.

BROADENING THE DOCTOR'S RESPONSIBILITY FOR PATIENT CARE.

ARTHUR J. LINENTHAL and BEATRICE PHILLIPS. (Dept. of Medicine, Harvard Medical School; Beth Israel Hospital; and Simmons College School of Social Work, Boston, Mass.)

A teaching program for fourth-year Harvard medical students stresses the doctor's responsibility in dealing with social, envi-

ronmental, emotional, and economic factors related to illness.

In 12 years, approximately 250 students have participated in groups of four to seven during their medical clinical clerkships. With each group, the doctor and social worker have planned and led eight or nine weekly, 1-hour sessions. At each session a patient, known to the students, is discussed who has a common medical-social problem, such as: myocardial infarction in a wage-earner or housewife, pneumonia in a young mother, cerebral vascular accident in an elderly person, duodenal ulcer in a person living alone, and malignancy.

At each session the discussion is directed to stimulate student thinking about the physician's responsibility for the many phases of patient care. Emphasis is placed on understanding each patient in his social environment during the medical diagnostic process, on integrating medical and social factors during treatment, on interpreting diagnosis and treatment to the patient and the family, and on developing desirable, thoughtful attitudes in the doctor's relationship with his patient.

As the need for social resources becomes apparent in planning for the patient, specific facilities are described as examples of a community's services. Discussion focuses on the doctor's responsibility for knowing about the resources in his community, for using them constructively in the care of his patient, and for utilizing his unusual opportunity to participate in further community health planning.

A TEACHING PROGRAM FOR SENIOR MEDICAL STUDENTS IN A PSYCHOSOMATIC CLINIC. REX PITTINGER, RALPH J. COPPOLA, EDNA FITCH, and L. W. EARLEY. (University of Pittsburgh School of Medicine, Dept. of Psychiatry, The Staunton Clinic, and The Western Psychiatric Institute and Clinic, Pittsburgh, Pa.)

A method for teaching the total care of ambulant patients with a discussion of teaching problems arising over a 4-year experience is presented. This clinical teaching program includes 105 hours assigned to Psychiatry plus making a senior psychiatrist available for consultation at any time students in clinics geographically contiguous with the psychosomatic clinic so request. The time division among various exercises is outlined. Stress is laid on (1) aiding the still formative student to develop individual, personal techniques for meeting patients under adverse conditions where patients are ambulant rather than "captive" in a hospital; (2) the position of psychiatry as a general discipline related to the interpersonal nature of medicine rather than on its primary specialty functions; (3) discussion of students feelings about their patients as a valuable educative tool; (4) introduction to the student to the practical meanings of medical fees; (5) problems surrounding placing responsibility for care on students; (6) problems of contact with referring physicians; (7) teaching the time "economics" of medical care; (8) how to concretely answer a consultation request; (9) the specialty aspects of psychiatry which most often come into the purview of general practice such as commitment, patients with low intelligence, special problems of organic brain damage and suicide; (10) problems of terminating therapy; (11) what the real import of "just talking" is; (12) what the problems of simultaneous treatment by more than one physician are.

The values of the program to the student, methods of assessing his learning, and blocks to the learning process are fully discussed.

AN EXPERIMENT IN CORRELATIVE TEACHING. DIETRICH C. SMITH and CHARLES VAN BUSKIRK. (Departments of Physiology and Neurology, University of Maryland School of Medicine, Baltimore, Md.)

In response to the growing concern that the graduate in medicine is not prepared to play his role as a man and a citizen—in spite of improvement in the professional aspects of medical education—the faculty estab-

lished 3 years ago a new freshman course entitled "Man and His Environment" designed to broaden the student's horizons beyond the rather narrow perimeter of the usual first-year courses and to make him aware of the physical, social, and cultural forces in our modern society that affect the practice of medicine. The course consists of 32 2-hour periods, the first hour being given over to a formal lecture by an invited outside speaker and the second hour devoted to discussion and development of the lecture. Lecturers were selected from among the most distinguished men in their field and were by no means restricted to medical men but included physicists, chemists, anthropologists, sociologists, mathematicians, psychologists, and geneticists as well. The lectures were planned to cover the following subjects in the sequence named: the origin and development of matter and life, growth and development of both physical and psychological in man, genetics, particularly as it relates to medicine, the influence of disease on civilization, social patterns in disease, and the adaptation of man to his social, physiological, and cultural environment. During the course of the lectures the student becomes aware of the problems in each area and presumably sees them in the perspective of medicine. After 3 years' experience, the general verdict, based on both faculty and student opinion, is that we are at least headed in the right direction.

A LIBERAL ARTS MEDICAL CURRICULUM AT BOSTON UNIVERSITY. LAMAR SOUTTER, J. PHILIP MASON, RICHARD M. MILLARD, and DONALD I. PATT. (School of Medicine; Depts. of Chemistry, Philosophy, and Biology, College of Liberal Arts, Boston Univ., Boston, Mass.)

The Liberal Arts and Medical School faculties of Boston University have been studying a combined curriculum for the past 2 years aided by a grant from the Rockefeller Foundation. The aims of the two faculties have been to improve the quality of the educational experience and also to shorten the time necessary for obtaining it. In setting up a combined curriculum, a committee from the two schools has studied many aspects of secondary, college, and medical school education. The best means for improving quality and saving time lie: first, in avoiding repetition of good secondary school courses at the college level or of anticipating medical school courses while in college; second, in making enough use of each summer for educational purposes so needlessly long intervals do not elapse between academic sessions and yet enough time is preserved for adequate vacations; and last, in setting up special courses in most subjects so that the students can proceed more rapidly and at greater depth than less highly selected college students do now. The plan envisages considerable flexibility in course selection as well as the possibility of dropping out unsuitable students at the end of the first 2 years. Temporary withdrawal of able ones for a year's extra study or research will also be possible. Of particular importance in its functioning will be a tutorial system and a residence where students, house officers, and members of both faculties will live and intermingle for educational and social purposes.

THE DALHOUSIE POST-GRADUATE PROGRAM. AN EXPERIENCE IN CONTINUING MEDICAL EDUCATION. LEA C. STEEVES. (Dept. of Medicine and Post-Graduate Division, Faculty of Medicine, Dalhousie University, Halifax, N.S.)

The Faculty of Medicine at Dalhousie University is the only one in Canada's four Atlantic Provinces. This area of 94,237 square miles of lake-studded forest land, broken into peninsulas and islands with 8,250 miles of coast line, supports 1,792,000 people in an economy based on lumbering, fishing, and, to a lesser degree, mining and shipping. Its 1,381 doctors work with facilities ranging from the most modern of hospitals to the historic kitchen table.

During the past 7 years, the Faculty's 32-year-old Refresher Course has been ex-

panded until it now consists of five refresher courses scattered throughout these Atlantic Provinces, six short clinical courses at the University, a general practice residency, repeated short "tours" to more remote areas of the Provinces, each of which resembles ½-week of a standard "circuit course," and a program providing speakers and related facilities to small hospital staffs and local medical societies in all four Provinces. To meet local circumstances, a modified "circuit course" called a "regional course" has been developed, permitting a small part-time faculty to provide 18–24 hours of clinical post-graduate experience annually to five widely scattered areas.

This development has been possible through the financial aid of the W. K. Kellogg Foundation, with subsequent support from the four Provincial Medical Societies, the College of General Practice, and others. Further Kellogg support is permitting a logical extension of activities from general practitioner continuing education into residency training. As Dalhousie already has a 5th-year undergraduate internship, this permits the Medical Faculty to offer a full fourfold medical training program.

A recommendation that much needed supporting funds for postgraduate medical education might properly be derived from pharmaceutical companies and lay medical societies is presented.

CONSTRUCTION OF A FINAL EXAMINATION IN CLINICAL PSYCHIATRY. ROBERT J. STOLLER and ROBERT H. GEERTSMA. (Depts. of Psychiatry and Medical Psychology, School of Medicine, University of California Medical Center, Los Angeles 24, Calif.)

The senior clerkship in psychiatry at U.C.L.A. School of Medicine is designed to teach students to observe, understand, and evaluate emotionally disturbed, hospitalized patients. Examinations employing essay and multiple-choice questions fail to assess a student's proficiency in making clinical evaluations. Performance evaluations from instructors provide no control over the instructor's biases and are based on conditions of observation which are not uniform. The problem was to develop a method for adequately testing what the student is taught in the clerkship.

Spontaneous, 30-minute psychiatric interviews were filmed of two patients with different pathology. The six clerkship instructors, all psychiatrists, viewed the films and separately made clinical evaluations of the patients by assigning ratings (from 0 to 6 representing a continuum of characteristicness) to each of some 300 evaluative statements. About 100 statements for each patient showed sufficient agreement among the instructors to be used for the examination. An average of the instructors' ratings for each of the 100 statements yielded a criterion evaluation for each patient.

For their examination, students were shown the films and made their own evaluations of the patients with these 100 preselected statements. An IBM electronic computer found the correlation and hence the extent of similarity between each student's evaluations and the appropriate criterion evaluations. The closer a student approximated his instructors' averaged evaluations, the higher his grade.

This method is extremely fair to students, because everyone works with the same data and selective biases of instructors in grading are eliminated. Common shortcomings in students' clinical skills can be discovered by factor analysis and used to improve subsequent teaching. Because of the quantified data obtained with the present method, research problems regarding psychiatric evaluations can be explored. The application of this method to teaching and to evaluative and research problems in medical areas other than psychiatry should be numerous.

THE NEW STANFORD CURRICULUM. LYMAN M. STOWE. (Dept. of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco, Calif.)

This program will be inaugurated in 1959, coincident with the consolidation of the Medical School on the University campus. Its purposes are (1) to provide a core of basic medical knowledge on which the student can build his further medical education and his choice of life's activity, (2) to provide an opportunity to relate medical and non-medical work, (3) to inculcate in the student the principles of the scientific method, and (4) to treat the student as a graduate student.

Students are accepted after at least 3 years of college work into a 5-year program during the first 3 years of which time equivalent to an additional college year is provided. The student must use this for nonmedical work or for research. The medical work of these years consists principally of two interdepartmental courses running throughout the 3 years. The first of these is conducted by the basic science departments in multi-discipline laboratories. It begins with study of the cell, progresses through a subject sequence of body systems, and terminates in an independent research project. The second, conducted by the clinical departments, concerns itself with growth and development, with the approach to the patient, and with the techniques used in the elucidation of clinical problems. The 2 final years are devoted to integrated courses conducted by the clinical departments. These are planned to give students maximum opportunity for prolonged observation and for assumption of responsibility in the care of the patient.

Extensive free time is available throughout the 5 years. Student participation in research and independent study is strongly encouraged.

AN EXPERIMENT IN FACULTY SELF-EVALUATION.

Study Committee.* (Bowman Gray School of Medicine, Winston-Salem, N.C.)

In the history of faculties of many medical schools there appear to be intervals characterized by confusion of objectives, lack of understanding of common problems, and complacency. The avoidance of such periods and continued progress of any educational institution requires that its faculty review periodically its objectives, policies, and functions. This is essential to assure a well balanced program with objectives consistent with the changing needs of society.

With this in mind, a faculty committee began an extensive study in 1956 of the past history and present status of the medical school, including a detailed survey of departmental activities and load. Emphasis was placed on the ecology of the faculty—the identification and analysis of factors which affect academic development and contributions. Recommendations were made to correct existing deficits and handicaps, and policy guidelines were suggested for future development. The committee report was used as background material for a 3-day faculty conference held away from the medical school, June, 1958. The workshop method was employed. Over 90 per cent of the full-time faculty participated.

Opinion was unanimous that this experiment in critical self-analysis was a valuable and necessary reorientation for every individual involved, exposed drifts and trends both good and bad, and formed the basis for sound planning for the future.

The purpose of the paper is to describe more fully the methods of survey and faculty reaction. It is felt that techniques used may be useful to other institutions.

* Study Committee: Manson Meads, M.D., Chairman; William H. Boyce, Clyde T. Hardy, Jr., C. Nash Herndon, J. Maxwell Little, and Ernest H. Yount, Jr.

JOINT TEACHING PROGRAM IN PSYCHIATRY-PEDIATRICS.

Henry H. Work. (Department of Psychiatry, School of Medicine, University of California Medical Center, Los Angeles 24, Calif.)

This paper will describe the joint teaching efforts in the undergraduate program of the Department of Pediatrics and the Division of Child Psychiatry of the Department of

Psychiatry at the U.C.L.A. School of Medicine.

The basic plan of this teaching has been in operation for 4 years but has been somewhat elaborated during that period of time. The concepts of this form of teaching have been partly based on the various meetings between pediatricians and psychiatrists occurring over the last 15 years, beginning with the Hershey Conference and continuing through the symposia at the American Orthopsychiatric Association entitled "Medical Psychology in Pediatric Teaching."

The combined teaching program has been adapted to a 9-week segment of the third-year curriculum (a quarter) and takes place in an outpatient setting. The students during their previous 2 years have had introductory courses in psychiatry, as well as in family medicine under the joint supervision of Pediatrics and Psychiatry. The combined operations of teaching in this period will be discussed as follows:

First, the incorporation of a psychiatric consultant into the teaching supervision of students in the Pediatric Clinic. This will be described both in respect to the usefulness of and the effect upon the students of the psychiatric consultant. The importance of the well baby clinic, where teachers with the combined knowledge of pediatrics and psychiatry are utilized, will be described.

Second, the specific work of the Child Psychiatry Division as a part of the specialized teaching in pediatrics consisting of an elaboration of history taking and of the understanding of the pathology of mothers and children. This portion is carried out in the psychiatric clinic where the students, having selected a patient from their pediatric case load, work up the family problem in some detail over a period of 6 weeks and come to a conclusion and a method of disposition with psychiatric supervision.

Finally, the use of selected and supervised field trips to demonstrate both the facilities of the area, as well as varying types of psychopathology of children, will be described in relation to the total program.

MEDICAL EDUCATION FORUM

Editorial

HOW FIRM A FOUNDATION

Despite the recent increases in dues to member institutions, the financial situation of the Association of American Medical Colleges continues to require strong financial support from other sources. In part, this need is based upon the development of new programs designed to make the Association ever more useful to medical educators and medical schools. The Teaching Institutes, *The Journal of Medical Education* and other publications are financed in part in this manner.

Two recent developments demonstrate the growing importance of private foundations in the growth of the A.A.M.C. The costs of medical education are a subject of lively discussion at both federal and state levels. The studies by Carroll (to be published in the near future) and Knott (this journal, May, 1958) have demonstrated techniques that may be applied more broadly. Now the W. K. Kellogg Foundation has made a grant for support of a pilot study which would permit a periodic comparative analysis of the costs and income involved in undergraduate medical education.

A second important development is a grant from the W. K. Kellogg Foundation to support a study of the internship as it is presently operated in medical school-controlled hospitals.

The receipt of these grants is a propitious occasion for the Association of American Medical Colleges to extend its gratitude to the other Foundations which through the years have supported our program. The China Medical Board, the Sloan Foundation, the Commonwealth Fund, the Markle Foundation, the Macy Foundation, and the Rockefeller Foundation have made possible the growth and development of this Association in the past and, we hope, in the future.

JOHN Z. BOWERS, M.D.

Addresses

KNOWLEDGE COMES BUT WISDOM LINGERS*

MELVIN A. CASBERG, M.D.†

In the preparation of a speech, the benefits of establishing a title accrue not only to the audience but also to the speaker. The latter reaps a dual reward, that of the intellectual pleasure of his titular search through the Elysian fields of literature, as well as the acquisition of an inner confidence resulting from the construction of an elocutionary blockhouse from which he may dash bravely on oratorical forays.

Likewise, the choice of a title, regardless of its relevancy to the content of the address, is of considerable significance to the audience. If the two actually are related, then the listeners will delight in the meanderings of the speaker as he delicately skirts, then forcefully hammers home his thesis, stroke after stroke, on the anvil of his title. Should there be no apparent or immediate association, then the most intriguing challenge of the hour may well be the intellectual exercise provided by the attempted correlation of the address and its title.

With this brief prologue on the advantages of a title, it must be admitted that there is room for reasonable doubt whether Tennyson was thinking of the problems of formal education when he penned the verses of Locksley Hall. Nevertheless, that portion of his poem which has been selected as the title for this address has a certain pertinence to the current crisis in education. Actually, our future stature as a nation depends to a considerable degree on an appreciation of the fact that, while a certain relationship does exist between knowledge and wisdom, these two words are by no means synonymous. Thus, as we apply the tools of constructive criticism and examine our educational system, it may not be amiss to focus our attention on the words, "Knowledge comes but wisdom lingers."

The Great Debate.—Recent developments on the international horizon have thrust the educational program of our nation into the spotlight of public scrutiny. The community conscience has stirred in uneasy doubt as to the adequacy of the current educational program. Suddenly we find that intellectual stature has been equated to national survival. Certain stigmata which in times past have been criticized as frilly luxuries of higher education now have been accepted as the starkest of necessities. A multitude of self-appointed specialists have been attracted to the arena of debate, each sponsoring a panacea specifically concocted for the ills of modern education. Rarely does one find a current magazine or newspaper which does not allude to some facet of our nation's educational doldrums. A public address on almost any subject loses much of its prestige unless it focuses at least some of its attention on the problems and solutions of the intellectual inadequacies of our youth.

Caught in the crossfire of debate, where fact and fiction are not immediately distinguishable and the fog of emotional overlay delays the identification of truth, there is urgent need

* Commencement Address, Greenville College, Illinois, June 2, 1958.

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for cautious and mature decision lest, in the hue and cry for immediate reform, we throw out the baby with the bathwater.

The chain reaction of criticism follows the familiar pattern of least resistance, efferent rather than afferent. We find the professional schools directing their pejorative remarks toward the inadequacies of the baccalaureate curriculum. The caustic allusions of the colleges and universities are focusing on the "trade school" stature of secondary education. The high schools are referring scornfully to the "progressive" philosophy of the elementary years, and finally, the cumulative critical finger points accusingly at the educational irresponsibility of the parents. Parenthetically, this chain reaction of criticism flows with equal facility in either direction.

A varied assortment of platforms are presented by the champions of educational reform. There are those who would measure the stature of education only in units of the physical sciences, and, in the light of recent technological developments behind the iron curtain, protagonists of this narrow approach have attracted a sizeable following. Others, in the panic of international pressures, would subscribe blindly to the Russian techniques of regimented education, oblivious of the fact that, with numerical odds so strongly stacked against us, the long-range survival of our way of life depends not on a quantitative matching of human resources but rather in the area of qualitative maturation under the warm stimulus of an education in breadth as well as in depth. The sacrifice of the freedom of choice of the individual for the dictatorial requirements of conformity is far too dear a price to pay for the questionable returns of a temporary gain in international prestige.

In a comparative analysis of the totalitarian and democratic philosophy of education, one cannot help but admire the practical realism with which the Russians face the matter of teacher compensation. Behind the iron curtain the common laborer receives an equivalent average monthly income of $125; the high school teacher $300; the professional man, including the physician, the lawyer, and the engineer $400; and the university professor's monthly salary ranges from $1,500 to $2,750. In Russia the income of the university professor is sixteen times that of the common laborer, whereas in America it is only approximately twice this amount.

Though not as vocal in the current heyday of science, the liberal arts isolationist, whose blinders also narrow his academic vision and black out the relative importance of the sciences, is in just as great error as his opposite extreme. In the achievement of lasting benefit, education must progress uniformly on a broad front. Unevenness in mental growth is an even more serious distortion than physical deformity.

One of the factors contributing to confusion in the debate on the stature of our educational system is a rather widespread disagreement as to the definition and purpose of education. How many among the millions of television viewers would accept as valid the statement that the winner of a $64,000 quiz program is not necessarily an educated person? The mental regurgitation of a fact far too often is confused with creative ideation. In a large midwestern city there is resident in a mental institution a patient who can watch a train pass by and then recite with precise accuracy every number on the long line of freight cars. The learning of facts is an important part of education but these facts are but straws in the bricks of wisdom.

In its literal translation, to educate is to lead forth. This does not describe a static situation but rather an active and creative process involving the development and discipline of the whole person. Into what is the pupil led forth? He is led forth into his social and natural

environment. Hence, an adequate education must initiate and nurture in the student a mental and spiritual ferment ever seeking to improve his appreciation of and service to the world around him. Anything less than this falls short of the goal.

Despite the disparaging attitude of many educators toward the ubiquitous comic books and the commercial television set, the facts are that, for better or worse, these have become instruments of education. It is rather interesting to trace to their individual sources fragments of knowledge acquired by our modern youth. The story is told of two third-grade boys at recess who were describing with considerable accuracy the automotive world about them. Looking skyward they assessed the type and capabilities of a jet bomber flying overhead. Then, with equal facility they debated the potentials of a new model car which had undergone recent engine modifications. Their further comments were interrupted by the ringing of the school bell, and one of the lads was heard to say, "Aw, heck! Guess we've got to go in and string some more of those darned beads."

This fact of extracurricular education was brought home to me rather forcefully one evening by the erudite comments of my 10-year-old son, after we had listened to an hour's discourse by Dr. Hubertus Strughold, Head of the Air Force department of Space Medicine. The lecture, given on the University campus on the possibility of life on other planets, was directed primarily toward the college student, and, despite the evident interest of my son in the subject matter, I was convinced that he spent the hour floundering far beyond his intellectual depth. Dr. Strughold qualified his discussion of life as relating to the terrestrial form where the carbon atom was the structural unit and that greater heat-resisting forms of life might exist, for example, where the silicon atom made up the basic structure. On the way home, in the condescending manner of a parent, I was attempting to salvage the apparently wasted evening and had reached the matter of the silicon atom when my son interrupted to inform me that he was familiar with the essential requirements of terrestrial life and that the characteristics of the silicon man were well known to him. A surprised father then listened to a second and equally factual lecture on the problems of life in space. The source of this information was the comic book and the television. It was difficult on this particular occasion to criticize media of communications that had placed a 5th-grade student in a frame of mind capable of intelligent participation in a presentation for adults by a world authority on space medicine.

Education for the average.—Even the most avid defenders of our system of education must agree to the existence of problems in the American pattern of schools. In a country dedicated to the principle of education for all, it is to be expected that one of the hazards in the application of this ideal is the overemphasis of the average. Education in quantity readily lends itself, as does mass production in any field, to the development of a standard pattern. The historical concept of a nation composed of the free and the equal has carried with it in certain instances the erroneous connotation of social and educational uniformity and conformity.

Among the few immutable laws in medical science is that of human variability and individuality. The average individual or situation is symbolic rather than factual, as was learned to his great sorrow by the statistician who drowned crossing a river of an average depth of 3 feet. Unfortunately, to a considerable degree the average assumes an important role in the thinking of our youth, and any deviation from this base line is looked at with a certain degree of suspicion. In the eyes of many students one of the cardinal sins committed on the campus is that of nonconformity.

It is strange that a society which accepts as standard procedure an extra educational effort directed toward the below-average student will not focus realistically on the needs of the brighter student. While it is true that some institutions have faced up to their responsibilities to the better-than-average scholar, unfortunately this is the exception rather than the rule. In the face of the sizeable anticipated increased enrollments in our universities and colleges, this problem assumes an even greater significance.

The large university, by virtue of its sheer size, is perhaps more susceptible to the pitfalls of catering to the average student than is the smaller college with its opportunities for more personal relationships between faculty member and pupil. That this assertion has some degree of validity is borne out by a study on the Origins of American Scientists conducted recently by Wesleyan University of Connecticut. There were two parts of this study: first, the statistical determination of the proportion of the graduates of some 490 universities and colleges who had entered careers in science; and, second, the assessment of factors contributing to the effective production of scientists. It was somewhat surprising to note in the final report that, of the 50 highest ranking institutions of the nation in the production of scientists, 40 were small liberal arts colleges, many of which possessed a limited reputation. One of the striking features of this same list of institutions was the comparative absence of technological schools and larger universities of high reputation.

The authors of this report[1] in their analysis of the effectiveness of the smaller colleges in the production of scientists have this to say, "For the most part they have possessed but limited endowment and modest facilities, and their students have usually been drawn from the middle and lower-middle classes of surrounding semi-agrarian regions. In the kindest sense of the word they may be described as provincial, isolated at once from urban influences and from marked discrepancies of wealth and station. Their student bodies are not distinguished for intellectual selection but are strongly inclined to choose science as a field of undergraduate concentration. The influence of sectarian affiliation, though tempered, is still manifest, and the prevailing social and moral tone is severe and even ascetic. Their achievements in training scientists cannot, we believe, be attributed to the intellectual superiority of students, excellence of physical facilities, or, on the whole, professional distinction of faculty members. Rather, it must be explained in terms of the disposition of their students to aspire to the scientific profession and to the prevailing ethos of these institutions."

Perhaps one of the most critical areas in our educational system lies in the focus of attention and effort on a nonexistent pupil, the average student. The solution to this particular problem will lie in the appreciation and acceptance of the fact that the scholar possesses innate qualities of variability and individuality which cannot, without serious developmental injuries, be frozen into an average academic mold.

During the early school years negligence of the bright student may lead to irreparable intellectual damage characterized by two closely related symptoms, mental laziness and a loss of initiative. Habits thus acquired in grade schools have placed serious limitations on the future scholastic achievements of many of our youth. How many brilliant careers have been destroyed by the absence of adequate intellectual challenge in the formative years? Parenthetically, parents cannot neglect their educational responsibilities with the expectation that the schools will assume this entire burden. Frequent parental trips to the library and supervised projects at home have kept the flame of interest burning in many a bright

[1] R. H. Knapp and H. B. Goodrich, Origins of American Scientists, University of Chicago Press, 1952.

young child caught in an educational treadmill geared to the average. There is a Chinese proverb which states that a mother is the equivalent of 100 school masters.

The smaller college, as well as the larger university, must bear its share of responsibility for higher education, exploiting to the fullest degree its own peculiar assets. The larger university with its focus on graduate as well as undergraduate studies has the dual responsibility of education in quantity as well as quality. The former must not compromise the latter. These are the challenges which must be met with intellectual and economic courage, if our priceless national resource of the gifted student is not to be squandered.

Practical education.—Some European educators, while admitting certain shortcomings of their own, have been prone to criticize the vocational overtones they have observed in our educational programs. Sensing an overemphasis of the practical, they have listed our most conspicuous failing in education to be a lesser regard for culture and theoretical intelligence. Regardless of the justice or injustice of these criticisms, they probably contain sufficient truth to warrant further investigation.

In an embassy in Washington shortly after World War II, I asked a visiting educator from Europe for his impressions of our way of life. His reply was brief and to the point, "You Americans know how to live but I am not certain that you know why you are living."

Despite the fact that over the past century and a half our nation has carried out an educational experiment more comprehensive than any other in the history of the human race, and one of which we Americans may be proud, this should not blind us to possible errors needing our attention. One of these shortcomings, besides that of education for the average, may well be the overemphasis on a practical education.

Let us focus a little more closely on one example of this problem. To be deplored is that curricular strait jacket which, under the guise of a premedical course, leads the student on a guided tour through a maze of preordained credit hours which must be balanced delicately against matriculation in medicine. The stigma of such a preprofessional brand far too often sets aside its wearer as something distinct and apart from the cultural atmosphere of the campus. This academic segregation, if permitted free rein, will gradually undermine the true professional stature of medicine leaving in its stead a supertechnician. Well over a generation ago William Blackstone said, "The medical profession beyond all others has remarkably deserved the character of general and extensive knowledge." The question raised for our serious consideration is whether the education of today is contributing to the development of a broad professional stature as defined by Blackstone.

The obsession with practicality has permeated campus research activities. Historically, much of the reason for this situation rests with the critical demands of World War II, when our nation's very survival depended upon speeded-up programs of applied and team research. However, we cannot continue to borrow indefinitely from our capital reserve of basic research in order to support applied research. Such a policy is shortsighted and kills the goose laying the golden eggs. In spite of the productive demands created by a cold war, we cannot afford to neglect basic or "impractical" research. Dr. Klopsteg, Associated Director of the National Science Foundation, has stated this position quite clearly as follows: "The ivory laboratory with its tower for seclusion and contemplation is an important place in the scheme of basic research. The most profound of new ideas are more likely to issue from the gifted individual with time and opportunity to think than from the large team. Indeed, without time and opportunity for contemplation, profound discoveries may not be made at all."

Looking back over the first half of this century and focusing on the scientific discoveries

which opened the door to an understanding of nuclear energy, one is impressed by the impractical discoveries leading ultimately to Fermi's practical experiment in the football stadium of the University of Chicago in 1942. First, Albert Einstein, a mathematician, proposed in 1905 that energy and mass are two expressions of the same thing and submitted the formula that energy equals the mass of matter times the speed of light squared or $E = MC^2$. This was one of the first major deposits to the account of the world's capital reserve on nuclear fission.

In 1919, Lord Rutherford discovered that the atom possessed a positively charged nucleus which we now call the proton. Thirteen years later another Englishman, Chadwick, in his exploration of the atom described the uncharged subatomic particle which we know as the neutron. Neither one of these scientists worked with uranium, and neither one was engaged directly in applied research.

Then, in 1939, Hahn and Strassman, in Germany, published the results of their experiments demonstrating that uranium produced barium. It would appear from their publication that the authors did not realize that the process they had described was actually atomic fission, nor did they seem to relate this discovery to Einstein's formula of mass and energy.

This is, in part, the simple story of nuclear fission, a story made possible by basic, individual, impractical research in which scientific facts, like the nuts, bolts, and girders of an erector set, are deposited in the basket of capital investment for use in the realization of future projects.

It is disconcerting indeed to learn from students engaged in research that their concept of this activity relates disproportionately to matters of equipment, application, and coworkers. In such instances, the ultimate is expressed in terms of electronic gadgetry, a practical goal and an associated scientific team. The most important factor in research, an inquisitive mind, is far too often relegated to a secondary role.

Stirring pleas for research equipment, when these are in reality substitutes for mental alacrity, remind me of an incident which occurred several decades ago on the other side of the globe. One evening as a young lad, I sat on the edge of a river in central India gazing rather disconsolately at a flock of ducks swimming in midstream. Even the oriental ducks seemed to possess that uncanny sense of a shotgun's range, and as I rose to leave, defeated in my purpose, there appeared coming down the path along the river's edge a scantily clothed Indian of the fisherman caste. After brief introductions he led me upstream a short distance to a crudely constructed dug-out hidden in the reeds. Soon I found myself gently floating downstream camouflaged by green branches and propelled by a human outboard motor. Returning to shore downstream, the hunt having proved successful, I divided the spoils with my benefactor, who in turn proceeded to share with me the details of his own techniques for trapping water fowl. My obvious amazement at his ingenuity surprised and pleased this sage of the jungles, who, while solemnly tapping his forehead with his long bony finger remarked, "Son, when one does not have modern equipment, one must use his head."

These statements are not presented as denials of the value of research equipment, or denials of the need for applied and team research but rather as an attempt to place these in their proper perspective. The educators of our nation must appreciate anew the significance of the fact that one of their prime functions is that of stimulating intellectual curiosity. We are prone to forget that this curiosity matures best in an environment of intellectual freedom divorced from the pressures of utilitarian motives.

Education and moral responsibility.—On the early morning of a spring day, a few years

ago, I stood on the rim of a hill in the wastelands of the west, watching with interest the results of man's technical invasion of the desert valley below. Among my companions on this occasion was a scientist of national stature and recognition. In spite of the apparent age-old serenity of our surroundings an undercurrent of excitement prevailed, and men spoke in the hushed tones of those who tread on the thresholds of cathedrals. On radio command the panoramic desert scene was cut out by the blackness of dark glasses and even the brightness of the sun paled to that of a wan moon dimmed by summer haze. There commenced over the loudspeaker a metronomic counting cutting through the cool morning air with the precision of a clock ticking off the seconds of doom, nine - eight - seven - six - five - four - three - two - one, and then the blinding flash of nuclear fission.

The currents of brilliant colors in the swirling fireball, like some gaseous whirlpool of Dante's Inferno, had barely subsided when I turned to observe the reaction of my scientific companion, who was witnessing his first atomic explosion. He stood, dark glasses in hand, with tears coursing down his cheeks, unchecked and unnoticed, oblivious of his immediate surroundings, staring at the evidence of this unleashed power rising like some malevolent genie over the sand flat below us.

That night, over the evening meal, my companion apologized for his apparent display of emotions, stating that at the time he had been unaware of any objective evidence of his deep subjective reaction. He continued to explain that the morning's demonstration of man's ingenuity in wresting from nature this particular secret of power had overwhelmed his sense of personal and national accountability. It was his considered judgment that education, regardless of its intellectual stature, was incomplete unless related to moral responsibility.

In many educational circles there is an inclination to disassociate the discoverer of facts from any responsibility for the impact of his discoveries upon society. Such a philosophy seems strange, to say the least, against the background of current world politics in which ultimate survival is closely related to intellectual capacity. If, for example, the scientist is assuming an ever increasing importance in the leadership of our nation, how can he divorce himself from a responsibility for the social implications of his discoveries? Does not the physicist have a certain moral obligation to work toward a society which will employ nuclear power constructively rather than destructively?

With the ever increasing emphasis on scientific and technical education there is reason for careful deliberation lest we lose the perspective of education in breadth. Scientific education is not merely education in science. Nor do the tools of scientific research furnish a master key which unlocks all the storehouses of intellectual wealth.

During World War II I served for a period of time with a roving band of guerrillas behind the enemy lines. My interpreter, a communist physician, and I had ample opportunity for protracted discussions as we hid in caves or camped in the mountains between periodic episodes of military forays. In debates setting forth or defending our individual philosophies of life, my materialistic friend would express repeatedly his amazement that I, a man of science, could believe in anything that could not be demonstrated by scientific standards of proof. He prided himself in his staunch beliefs only in those things which could be tested in the exacting crucible of laboratory research or solved by the precise intricacies of a mathematical formula.

One sunny afternoon as our motley band of warriors rested on the side of a mountain, my interpreter physician informed me that we had been surrounded by the enemy and our

position was most precarious. Plans called for a dash through this encirclement after dark. Letters home might be written and would be hidden safely for later procurement.

As I sat writing a farewell letter to my wife and children, each breath of air, each glint of sunlight on the sparkling mountain stream, each copper-tinted autumn leaf, each cascading warble of the birds, each gentle sigh of the wind became crystallized into something a thousand times more beautiful when viewed in the perspective of life and death. My communist friend sat a stone's throw away, deeply engrossed in the bitter-sweet task of composing words which might be his final communication with his wife and children.

In the midst of writing I paused to interrupt my companion's sober reflections and to question him as to whether the significant thoughts embodied in his composition were such as could be proved in the test tube or on the blackboard. The answer received was an averted look, for he knew as well as I did that our most profound thoughts in the face of the impending crisis were not related to the material things of life, nor could they be measured by the tools of physical exploration. There were neither qualitative nor quantitative tests that could evaluate accurately our intimate personal experiences of love or hope.

Spiritual understanding does not lend itself readily to the circumscription of a curriculum or credit hour. Neither does the purely intellectual appreciation of spiritual values necessarily denote depth of spiritual understanding. The experiential demand of wisdom embraces a far greater comprehension of life than does that of knowledge alone. Granted that the burden of educational responsibility for the moral and spiritual development of the student rests with the parents, this does not free the educational institution from its obligation of maintaining an environment in which such growth finds a healthy intellectual soil. It is in this very area of difference between our philosophy of education and that practiced behind the iron curtain that we find the mustard seed of faith which, if nurtured, blossoms into an expression of moral strength.

It has been said that history will characterize our civilization as one in which the measure of success was that of material possessions. Be that as it may, unless our system of education builds in the youth of today the capacity to appreciate the creative fruits of other than the material things in life, we will have denied our adults of tomorrow most of life's really profound satisfactions.

As the dean of a school of medicine several years ago, it was my habit to present a series of lectures to the senior students on the broad ethical aspects of the practice of medicine. In the discussion of charges for professional services I made it a practice to relate to these embryo physicians the circumstances under which I received my greatest surgical fee.

The mission hospital, located in the jungles of Central India, was considered by the superstitious villagers as the Temple of Healing, where battles were fought between the evil spirits of disease and the good spirits of health. One day, a shikari, or hunter, living in the jungles brought in his wife who was seriously ill and in need of immediate surgical care. Fortunately, the surgery and postoperative convalescence progressed quite satisfactorily. The day of departure arrived, and, after an invocation calling for the blessing of the gods upon the Doctor Sahib, his staff, and the hospital, the shikari lifted his wife on the bullock and then scrambled up in front of her. Soon, the two of them, riding bareback tandem, disappeared down the road headed for their jungle hut.

From that day until my departure from the mission station several months later, I saw my shikari friend once a week. After completing the morning's work at the hospital I would find him seated on the steps of my bungalow, his bullock tethered nearby.

The weekly visit in itself was no simple task, for the plodding trip by bullock was a full day's activity. I could imagine the shikari on Monday beginning to plan for that week's gift. Sometimes the gift was at hand, something taken from his small store of possessions. Sometimes, with a larder depleted, the hunt was long and tedious. Then would come the ride—all day and, finally, the brief visit with the Doctor Sahib.

On my arrival he would stand and then bowing graciously with all the formality he could muster, hand me a cloth-wrapped bundle. The partially decomposed rabbit or the not-so-fresh wild fowl eggs wrapped in a dirty piece of cloth were the produce of his labor, gifts of love. In these transactions no bag of jewels was ever handled with greater pomp and care.

After the shikari's departure, I buried these gifts in the quiet of the night, mere refuse in the eyes of the world, and yet as I walked back to the bungalow the day's accumulation of physical tiredness melted away, for in that rag I had been permitted to observe the miracle of love working in the depth of man's soul. This was by far the greatest professional surgical fee I have ever received.

Conclusion.—Historians through the centuries have recorded man's interest in the education of youth. Each generation of adults has had its quota of those who have taken a particular delight in focusing the public attention on the decadence of the younger generation. Many of these preserved criticisms speak an ageless language whose dateline is as current as that of the morning's newspaper.

"The children now love luxury—they have bad manners and contempt for authority. They show disrespect for their elders, and love to chatter in place of exercise. Children now are tyrants, not servants of their household. They no longer rise when elders enter the room. They contradict their parents, chatter before company, gobble up dainties at the table, and tyrannize over their teachers." Thus wrote Socrates over 2,000 years ago.

An Egyptian priest, in a particularly pessimistic vein, inscribed the following criticism of his own times some 4,000 years ago: "Our earth is degenerate in these latter days. There are signs that the world is coming to an end. Children no longer obey their parents. The end of the world is near." One is inclined to wonder if this is not rather conclusive evidence of the existence of peptic ulcers even at this early period in our history.

The youth of our times are engaged in an educational effort fitted into the background of a modern world of kaleidoscopic change. Social and economic upheavals are the order of the day. Avenues of communication have brought our world into closer personal relationship than was possible within the confines of a single American colony less than two centuries ago. The boundaries of intellectual investigation are no longer relatively stable but are moving out into the periphery of mental conquests at so rapid a speed that the forward educational camp sites are hardly established before they must be moved again closer to the fringes of more recent activity. Our scope of interest knows no bounds and reaches from the searching eye of the electron microscope, dissecting as it does the minutest components of the single living cell, to the exploration of the galaxies in space, millions of light years removed. This is the environment against which we should measure the relative merits of our philosophies of education. These are the terms of reference which should influence our re-evaluation of educational methodology.

Each fraction of our society should assume a certain share of responsibility in the maturation of its individual components. In their own particular areas, the family, the church, the school, and the community, individually and collectively, are in a position to make contributions essential to the development of the child. It is only thus that education

truly becomes the continuing process of "leading out" our youth and preparing them better to serve and appreciate their environment. In the fulfillment of this obligation we cannot afford to forget the need for symmetrical development, lest an asymmetry of growth distort the understanding of the priorities of life's values. The association of the superior intellect with an infantile spiritual understanding is in many ways more to be pitied than the tragedy of the imbecilic mind housed in the well developed body.

Education should progress on the broad front of the student's total growth, not merely as the accumulation of varied assortments of knowledge but rather in the establishment of an inquisitiveness which will lead ultimately through creative reasoning and experience to mature wisdom. It is in this context that our youth, in spite of an intellectual environment somewhat weighted by the devotees of materialism, will derive a more balanced order of values from a clearer interpretation of the whole of life. Many centuries ago a Persian poet[3] with a remarkable insight into the nature of this problem wrote: "Shoulds't thou repair, then, to thy larder and there find of all thy once bounteous store but two loaves remain, I yet council thee to sell one wherewith to buy white hyacinths to feed thy soul."

[3] Muslir-ud-Din Saadi (1184–1291).

SOCIAL MEDICINE IN THE CURRICULUM OF MEDICAL EDUCATION*

P. MUNTENDAM†

If we want to speak about social medicine as a subject of instruction in the training of medical students, we should first explain what is meant by social medicine. The necessity of this may appear from the fact that the late Dr. René Sand, former Professor of the Université Libre at Brussels and one the greatest experts in the field of social medicine at the beginning of this century, collected no less than 52 definitions of social medicine taken from various publications. One of these definitions was the definition I gave in 1937. Twenty years later my definition has changed; it has been adjusted to the modified views on the significance of disease and health in the community. Yet it is desirable that we should try to arrive at a common definition, at any rate for Europe, in order to put an end to the confusion of tongues now prevailing with regard to the conception of social medicine.

Definition.—Social medicine is that part of medicine which:

1. is concerned with the study of the connection between health and disease, on the one hand, and the community in all its groupings on the other hand;
2. determines upon the measures to be taken in consequence of these studies for the promotion and preservation of health and in order to prevent, combat, and recover from diseases;
3. creates the possibility to apply these measures;
4. carries these measures into execution.

Through a further classification of the subject matter we shall try to prove that this definition really comprises the whole field which in our opinion is covered by social medicine. However, before proceeding to this classification, it may be useful to draw the attention to one word in this description, viz., the word "health." When comparing this definition with many of the definitions that were used in former days, it strikes one that the latter definitions deal exclusively with disease. The introduction of "health" in the new definitions is a result of and is in accordance with the views held on the objectives of medicine in general and of social health care in particular. The same evolution is found in the definition of "hygiene," to which we shall refer later on. Moreover, it may be pointed out that the definition of social medicine is concerned with "disease" instead of with "patients." Social medicine, as a science, is not directed toward the individual; in its application, however, the individual as a social element may be brought within the scope of social medicine.

Classification.—Social medicine, too, may be distinguished into (social) etiology, pathology, and therapy. We shall see later on how these branches together form the field which in the definition was indicated as social medicine.

1. *Social etiology:* By this we mean that part of social medicine in which society is on the one hand revealed as the cause of a disease and on the other hand as the influence to preserve or to promote health. When taking the definition of "health" as it was given by the

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World Health Organization as a starting point, we shall have to distinguish between physical, mental, and social well being—on the understanding, however, that a clear-cut demarcation between these branches is impossible; on the contrary: one of the three branches could not be influenced without affecting the other branches at the same time. This may be elucidated by the following example. Through nutrition the community clearly influences the physical condition of the individual and, consequently, it also influences public health in general. There is plenty of historical and geographic evidence to prove this thesis. It is, therefore, surprising that in many countries the public health authorities exert little influence on the nutrition policy of the Government, while, particularly in the Netherlands up until now, not enough attention has been paid to questions of nutrition, when training prospective physicians.

As regards mental health, mention should be made of the housing problem. Although it has been repeatedly tried to prove that there is a correlation between the *physical* health of a person and his housing conditions (e.g., with regard to the cause of diseases such as tuberculosis and rheumatism), it may safely be stated that none of these arguments has stood the test. This being as it is, in the post-war years it has become very clear that the housing conditions are an etiologic factor in mental disturbances. The sharing of houses is a real scourge of this time. A shortage of 258,000 houses in 1956, compared with a shortage of about 350,000 houses in 1945, presents a gloomy picture of the pace at which this cause of diseases is expelled from our Netherlands community.

As regards social welfare, work is an important factor. In particular, we are interested in the aspect of work furthering the self-respect of the individual. If the work proper or the conditions of employment in the widest sense of the word—in this connection human relations are of great importance—are not attuned to the capabilities and the mental qualities of the individual, this may disturb the social well-being and health of the person concerned. Industrialization might thus become a cause of disease to larger or smaller groups of the population.

Data derived from scientific research work in the field of social etiology should be applied in the practice of medicine. Both in diagnosis and in therapy the patient should not be detached from his environment. The community should be projected in the individual. To this end it will be desirable to include social medicine in the so-called clinical branches of the medical training.

2. *Social pathology:* In the first part of the definition of social medicine we were speaking about an interaction of factors. Whereas under social etiology we described the influence of the community on health and disease, social pathology deals with the influence of diseases on the community; or in other words: social pathology is that part of social medicine in which the social significance of diseases is studied. The social significance depends on various factors. Three important factors are dealt with below.

In the first place, the prevalence of a disease is of great social importance. It is, therefore, much to be welcomed that, in the last few years, in the Netherlands more and more interest has been taken in research work with regard to morbidity in general and with regard to certain diseases in particular. In this connection the prevalence of diseases in certain age groups, male or female, in various social groupings or different occupations may also furnish data that may be of interest. Attention should also be paid to the geographic pathology.

Of no less importance is the course of the disease. Its tendency to recovery, disablement, lethality, or relapse, as well as the duration of the disease, determines its social significance.

Infectiousness is also a factor, which may considerably determine the significance of a disease for the community. It is, therefore, a misconception to try to measure the social impact of a disease by one social influence. In one case the social impact of a disease may be determined by its frequency, in another case by its infectiousness.

In the Anglo-American countries the world "epidemiology" is found to an ever increasing extent with regard to noncommunicable diseases. Especially in connection with chronic diseases and accidents it is frequently used. It should be taken to mean that which has been described above under social etiology, frequency and course of a disease.

The frequency and the course of a disease determine its social impact on the community. This impact may be distinguished into a social and an economic part, which in most cases are closely connected. A disease which is disturbing from a social point of view—we are thinking, for instance, of a serious epidemic of influenza—is, generally speaking, bound to have considerable economic consequences as well. It has especially been social insurance which has made clear to us of how much significance sickness is for the community.

3. *Social therapy:* The finishing touch of social medicine is formed by the extensive field which has been described in the second, third, and fourth part of the definition. It is that field which in the Anglo-American countries is generally indicated as Public Health, as clearly appears from the definition which as early as 1924 was given in the United States by C. A. Winslow, who died at the beginning of this year and who—like René Sand—may be regarded as one of the greatest experts in the field of social medicine in the first half of the 20th century.

As we pointed out in the definition, social therapy or social health care aims at the furthering and the preserving of health and at the preventing, combatting, and curing of diseases. As has been observed before, it will not always be possible to make a clear-cut distinction between the different fields. For instance: the policy with regard to nutrition, physical training, and recreation will just as well promote health as prevent diseases. The same applies to the technical provisions, such as the supply of drinking water, the removal of refuse, the purification of the air, housing conditions, the so-called "environmental sanitation."

In the Netherlands this social therapy, the Public Health Administration, is mainly in the hands of voluntary organizations, which are subsidized by the government. By stating terms the government may have certain regulating powers. Apart from that, the government may, through its legislation, make regulations for the organization of health care. In this respect the State has a supervisory task. Only in the three largest municipalities (Amsterdam, Rotterdam, and The Hague) the Public Health Administration is mainly in the hands of the municipal authorities.

Social health care need not be directed toward the community as a whole, but may be restricted to certain social groups, as for instance: children, aged persons, workers, etc.

In this discourse we have not yet dealt with the concept of "hygiene." The Dutchman Saltet, in imitation of the French hygienist Bouchardat, defined it as the science tracing the causes of diseases and indicating the measures to combat them. In terms which are more adapted to current notions of disease and health "hygiene" may be indicated as the science which is concerned with the furthering and preserving of health and with the measures to be taken in this respect. This definition is found back in the above-mentioned definition of social medicine, and it is clear that, according to this definition, social medicine comprises hygiene, and a separate indication of hygiene does not fit in with the development of the conception of social medicine.

In this definition and explanation we do not find the concept of Preventive Medicine. I do not feel the need of it. Generally speaking, preventive medicine should be taken to mean the preventive medical measures directed toward the individual. I consider these measures, however, to be a consequence of the social medical activities. The vaccination of an individual is, generally speaking, an act which forms part of the immunization of part of the population and the combatting of a communicable disease. Mother and child health is directed toward the health of a mother and a child, but at the same time forms part of the care for the mothers and children of a nation and, as such, is a social-medical measure.

In my opinion this detailed introduction was necessary to explain to you what I understand by social medicine. Before I try to give you an impression of the way in which, in my opinion, social medicine should be taught to students of medicine, this should be preceded by some information. It was not until 1950 that a chair of Social Medicine was instituted at the five Universities in the Netherlands, and they were instituted in various ways. At two Universities there is a chair of Hygiene, in addition to that of Social Medicine. Two of the five professors are "extra-ordinarians," that is to say: their professorship is not their main task. This is at Amsterdam, where the Director of Health of the city is at the same time Professor of Social Medicine, and at Leiden University, where I am a Professor of Social Medicine, my main task being Director-General of Public Health in the Ministry of Social Affairs and Public Health. I am not going to expatiate on the advantages and disadvantages of this double function just now; they may be brought up for discussion later on. It greatly depends on the nature of the professor how, in his opinion, his subject-matter should be taught; thus, for instance, one professor will emphasize the psychological factors of the patient's environment in his teaching of social medicine, another will take sociology as the starting-point of his teachings, whereas a third will mainly emphasize the social therapy, prevention, the combatting of diseases, and the promotion of health, including environmental sanitation, sanitary legislation, and social legislation. A fourth will focus most attention on epidemiology, in particular of chronic diseases. Among the present company I need not explain that this differentiation in approach to the subject-matter is the most striking feature of scientific freedom, and it is also attractive, since in this way scientific work at the Universities bears the stamp of the differences in personality of the various professors.

The outline I am going to give you on the teaching of social medicine at the Universities does not represent the situation at Leiden University, where I am a Professor of Social Medicine. The chair at Leiden is only 4 years old, and its development has greatly been hampered by the hard-pressed financial position of the State, on account of which it takes a very long time to form a staff of scientific workers, so that I am unable to teach in the way in which, in my opinion, it should be done. Thus, the following does not depict the situation at Leiden University as it really is, but it indicates the direction into which I'll try to develop it. Let me begin by telling you that the medical students at Leiden take much interest in social medicine; there are many students attending the lectures, and the reports which the students are to make of their practical work also clearly testify to the interest they take in social questions.

The teaching of social medicine should be divided into a theoretical and a practical part. In this lecture I am not going to deal with the postgraduate teaching of Public Health. As specialistic training this forms a subject in itself, but personally I am of the opinion that the Department of Social Medicine of the University should be included in this respect. Public Health Schools which are entirely separated from the Universities—at any rate in the smaller European countries which only have limited possibilities at their disposal—are apt

to lead to inefficient overlappings or to a weakening of the University departments of social medicine.

Theoretical part.—In view of the large number of medical students (in the Netherlands the admission to the Universities is free, and the number is not restricted through selection) and in view of the limited number of professors, it is for the time being impossible to teach in small groups, so we still have to make do with lecturing to large groups of medical students. In my opinion it is necessary that in one of the first years the students should be taught the principles of sociology and of medical statistics for a period of at least 6 months. This should be followed by the teaching of social medicine for 1 hour a week in the 4th and 5th year. The subject-matter to be taught may be divided in accordance with the outline I gave of social medicine. In the first of these 2 years social etiology and pathology may be taught, so generally speaking epidemiology, while in the second year social therapy should form part of the program. Now I know quite well that in this way I am putting things too schematically and that this scheme is deviated from repeatedly, as it is attractive to deal with topical subjects. Thus in this course, for instance, I have for many weeks been discussing the difficulties that have arisen in the Netherlands, Great Britain, and France between the doctors and the organization of social security. However, it is advisable to try to follow the line I just outlined as closely as possible in order to give the students a proper understanding of the questions involved. To this end it is preferable to take a certain disease as starting-point. Chronic diseases, such as tuberculosis, carcinoma, cardiac- and vascular diseases, are eminently suited to be taken as a starting-point. In addition, it is advisable that special experts should deal with some borderline cases. Thus, last year I asked an expert for 6 weeks to lecture during my hours on the public health aspects of anthropogenetics and this year on social psychiatry. It is also highly recommendable in a period of 4–6 weeks to ask various experts to deal with a certain subject in the field of social medicine. I always invite these experts to lecture as guests, since they, unfortunately, do not form part of my staff. Thus, for instance, the subject of rehabilitation might be dealt with by a physician who has specialized in the field of rehabilitation, a specialist in physical medicine, a sociologist, a psychologist, a labor physiologist, and a specialist in the field of chronic diseases and geriatrics. It will be clear to you that in a period of 2 years the students can only become acquainted with a very small part of the extensive field of social medicine. In addition, I require that the students study books in order to widen their theoretical knowledge; but the main thing is that our future physicians should learn to think in terms of social medicine and that they should learn to understand that the health and disease of their patients is the resultant of the interaction between body and mind on the one hand, and of the patient's environment and inheritance on the other hand.

Practical part.—In the Netherlands the practical part is still in the elementary stage. At Leiden University it is confined to a fortnight of practical work with a sociomedical service in the 6th academic year in order to gain an impression of certain parts of public health administration: dispensary for tuberculosis, mother and child health, mental defects, alcoholism, care for the blind, etc. This is insufficient. Last year I made a study tour through the United States, and I think the best thing I can do now is to give you an impression of the various possibilities I saw over there. With a view to the historical developments in your own country and in connection with the University you are attached to you may compare them with the way in which this problem could be tackled in your own country.

The essential question arising for the practical part of the teaching of social medicine is:

how can we try to bring the student into contact with people, whether they are ill or in good health, in their own social setting. In this connection several questions come up for discussion: ought the student be brought into contact with people's social surroundings right from the start of his medical training or only in the last years of his studies, and should the healthy family be taken as a starting-point or should the patient be placed in the center right from the beginning? In my opinion both systems require a basic knowledge of sociology.

I may subjoin a few examples with which I became acquainted in the United States. The most far-reaching system I found in the Boston University School of Medicine, where the Professor of Preventive Medicine is at the same time the Chief of the Home Medical Service and of the out-patients' department of the Massachusetts Memorial Hospital. This hospital is situated in one of the poorest quarters of the town, where the people depend on the hospital for their medical treatment and also their treatment at home, because this treatment is free of charge. In the last year of their studies the medical students visit the people at home, and apart from a clinical report they are to draw up a sociomedical report in which they are to indicate the measures which in their opinion should be taken from a social and from a therapeutic point of view. This system is unworkable in those countries in which the inhabitants within the framework of social security are dependent on the treatment of their family doctor. For that matter, the latter are sure to prefer this to a treatment at home provided for by the hospital.

In my opinion the methods I found in Philadelphia and Cleveland are more suitable to be applied in the different countries of Europe. At the Medical School of Philadelphia the students are assigned a family in their first academic year. They have the supervision of this family from a socio-medical point of view throughout their period of studying. Of course this system is based on the voluntary co-operation of the family. The names of these families are known to the hospital either through clinical treatment or through the out-patient department, and a special physician has been appointed to assign these families to the students. Furthermore, these physicians are in charge of the regular supervision. Apart from that, the students are in regular contact with the Professor who is chief of the Department of Public Health and Preventive Medicine. In discussion groups of five students the latter discusses the experiences gained by the students during their visits to sociomedical services.

Very attractive indeed was what I met at Western Reserve University, Cleveland, where the medical student studies the social setting right from the first year of the medical school. To this end pregnancy is taken as a starting-point, being a normal condition from a physiologic point of view. The student is assigned the family of a woman visiting the out-patient department of the hospital for prenatal care. After the woman has given birth to a child, this family remains under the supervision of the student, so that the latter can observe the child growing up in his social setting. In these cases, too, the experiences of the students are in small discussion groups discussed with the professor or with one of the members of the medical staff.

At the State University of New York I met with an entirely different system. At this University the students are assigned a family for 4 weeks in the last year of their studies. The City Health Department has in one way or another been concerned with this family. At the end of the said 4 weeks the students are to draw up a detailed sociomedical report on this family. This report is discussed in a discussion group under the supervision of the Professor. I was greatly impressed by the high level of these discussions.

From these examples it may be clear to you that there are various possibilities of studying the influence which the social environment can have on health and disease in practice. I am convinced, however, that in one way or another, at any rate in the last years of studying, the practical study of social medicine should form part of the medical training and that the co-operation of the clinical professors is required in this respect.

Whatever system for this practical training one may choose, a precondition, also for the theoretical training, is a well-qualified staff. The Professor of social medicine should have co-operators in the field of statistics, epidemiology, sociology, dietetics, occupational therapy, to mention just a few. However, such a differentiation is mainly required for scientific resarch work. In a small country like the Netherlands, where the Public Health Service has only limited research possibilities at its disposal, the departments of social medicine of the universities should have the laboratories to carry out the research work which forms the basis for the Government to build its Public Health policy on. If it should be possible to include medical students in this scientific research work, it would be advisable.

So the Department of Social Medicine of the University has a twofold responsibility in regard to the community:

1. the training of physicians who learn to regard human beings as being inseparably linked up with their environment;
2. carrying out the scientific research which provides the Government with the knowledge for a right policy in the field of Public Health.

Comments

ON GOLDSTEIN'S: "AN INQUIRY INTO THE VALUE OF RANK GRADES IN THE MEDICAL COURSE"

In his paper (*J. M. Educ.*, 33:193–200, 1958) Dr. Goldstein addresses himself to the problem of subjecting "the system of ranking grades to critical scrutiny." Following the reporting of four experiments involving the use of various types of examinations, he concludes that "ranking grades in a medical course are fallacious, contribute nothing positive, foster undesirable student attitudes, and are dispensable."

This critical review is being written because it would appear that several points in Goldstein's paper need clarification and correction. I shall take up these points as they appear in his paper.

His first sentence, while positively stated, is not universally true, nor should it be. Goldstein begins by defining traditional grades as "shorthand expressions for the *standing of students in relation to their classmates* (italics mine) in a hierarchy of ranks that are alleged to reflect relative knowledge of the several subjects." While grades may result in a ranking of students, this certainly need not be their primary *raison d'etre*. To suggest a different orientation and one which this reviewer trusts is employed in many medical schools, grading may be based upon a comparison of student performance against a "standard of excellence"; that is to say, a comparison of what the instructor or department desires the student should learn with what the student is able to demonstrate that he has learned. This system of grading is based in part on the concept that each department has in mind a minimum body of knowledge over which a student should have a command before he is eligible for promotion. Such a grading system is quite different from "ranking grades."

In his first experiment, Goldstein studied the precision with which essay examinations could be graded by a staff of nine instructors, scoring according to a pre-determined set of written rules. Basic points were allowed for each major item covered, additional points for specified elaborations. Every paper was read by three instructors according to a random alternation plan.

While a satisfactory curve of scores resulted, the curve of discrepancies between the highest and lowest score assigned by the three readers was not regarded as satisfactory. One-third of the students were subject to a shift amounting to two quartiles, depending on which instructor graded their examination. These results are cited as suggesting the uselessness of grading students in any but the grossest way. Two comments are in order concerning this experiment and its results. First, while Goldstein comments that "these discrepancies could not be accounted for by errors of one or a few instructors," he offers no evidence in support of this statement, and this is a crucial point since inter-examiner differences have often been noted in psychological studies of such situations. If the data for this statement have not been submitted to rigorous statistical analysis, they might well have been before the possibility of inter-reader differences was casually discarded as of no importance. Second, it would appear that, while written rules were provided to the readers, they could

not agree on the answers. This would appear to be either a fault of the readers, of the rules, or of inconsistencies and vagaries in the subject matter itself. Rather than "throw out" all attempts to grade examinations, efforts should be made to improve and refine the grading and educational process by better training of readers, by clarification and rigid objectification of scoring standards, and by better organizing and systematizing the teaching material upon which examinations are based.

Experiment 2 studied the results of oral examinations. "The questions ranged freely over the whole content of the courses (in pharmacology)." The same comments made above regarding the essay examination apply here with the addition that in this experiment no evidence is given that a set of criteria was provided the examiners, nor is it clear that all students were examined over the same material by all examiners. Thus, the discrepancies in this experiment might well have been due to differing subject matter materials covered by the several examiners.

The third experiment examined the relationship between objective and essay questions covering the same material on autonomic cardiovascular pharmacology. The assumption is made that the two sets of materials were equivalent, although it is not stated that this was a pre-determined fact. Goldstein's Figure 3 (p. 195) shows the scatter-plot of the scores on both examinations. Commenting on this figure, Goldstein says: "A few students had very high scores on both criteria, but for the class as a whole *no correlation is apparent whatsoever*" (italics mine). This again reflects the danger of making assumptions concerning statistical data without applying the appropriate statistical methods. Because the possibility of a correlation seemed apparent to the reviewer, a correlational analysis was made of the data presented in Figure 3. This analysis resulted in an estimated correlation coefficient of +.354, which is significantly greater than no correlation at the 1 per cent level of probability.

In the fourth experiment a written examination is compared with an oral examination covering the same material. Figure 4 (p. 196) plots the written examination scores against the oral ratings for each of 59 students. The implication in the discussion of these results is that there is some, but not much, correlation between these sets of data and that "no valid prediction of rank standing on one examination could be derived from rank standing on the other." Again, Goldstein did not compute the actual coefficient from these data. The reviewer, in an analysis of the data as given in Figure 4, estimated a correlation of +.449, which is again significantly greater than zero at the 1 per cent level of probability. This finding suggests, therefore, that there is the possibility of prediction from one examination to the other to the extent indicated by the coefficient of correlation: this in spite of the fact that there was no apparent attempt to equate the examinations—the oral examination being one of 20 minutes' duration, while the written examination lasted for 3 hours!

Finally, Goldstein defends his thesis in part on the assumption that grading produces competition and anxiety in students and that these are unhealthy and that the latter is a chronic condition. No evidence is given to support these assertions. Furthermore, the opposite thesis could also be defended, that is, that competetion and "normal" anxiety are factors closely involved in the drive and motivation for achievement.

The paper leaves the impression that the only real purpose of examining and grading students is that of finally being able either to rank them or to award them the designation of *satisfactory* or *unsatisfactory*. I should like to suggest that examining and grading in medical school, as in any other school situation, involve the whole subject of learning and

motivation to learn. Examinations, depending upon the way in which they are used, can be a useful and valuable didactic experience for the student: one by which he can learn the standards of knowledge expected of him, how closely he approaches achieving these standards, and which afford him the opportunity of correcting errors of commission and investigating errors of omission pointed up by the examination. This, above and beyond the end-product grade of the examination, is all too often all that is ever looked at by either instructor or student.

Furthermore, the differential motivation to study attached to the several types of examinations seems to be of some importance. It is a truism that students who are given one type of examination, say a multiple-choice type, repeatedly come to expect that kind of an examination the next time. Expecting it, they then pattern their habits of study in accordance with their past experiences with this particular type of test. Thus, in the so-called objective test, students traditionally prepare by studying facts, figures, etc., which they will be able to supply on the examination when the appropriate cues are given. On the other hand, the psychological set developed when an essay-type test is expected involves the organization of the material and learning of the subject matter well enough so that the student does not need cues in order to use it. The latter approach to study would seem to involve a better basic understanding of broad principles which can be used again and again rather than the mere collection of many isolated facts which, once regurgitated. may then be forgotten.

Woodrow W. Morris, Ph.D.
Assistant Dean
Medical Student Affairs
College of Medicine
State University of Iowa

REPLY

Despite Dr. Morris' careful dissection of my article, I find little fundamental disagreement between his views and mine. The point of my paper was to show that as a *practical* matter, when we *try to rank* students, even though we exercise unusual care, we get very unreliable results. Dr. Morris appears to agree with me, on the other hand, that a *proper* purpose of grading is, to quote him, "based in part on the concept that each department has in mind a minimum body of knowledge over which a student should have a command before he is eligible for promotion." To achieve this valid aim of grading is precisely the reason for my proposal of *satisfactory* and *unsatisfactory* designations.

As to the reality and unhealthiness of competition-related anxiety in medical students, Morris' thesis may be as tenable as my own. Until valid experiments on this point are devised, we must each depend on our subjective impressions derived from our own teaching experience.

I thoroughly agree with Morris' last two paragraphs relating to the didactic value of examinations (a point which I made quite strongly in my article), and to the general inferiority of so-called objective tests. About the latter, M. S. Marshall (*Educational Forum*, 20:279, 1956) has recently written at length and in his usual provocative style.

Avram Goldstein, M.D.

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Abstracts

Modern Clinical Psychiatry. By ARTHUR B. NOYES and LAWRENCE C. KOLB. 5th ed. Philadelphia: W. B. Saunders, 1958. 678 pp.

It has been the purpose of the authors, as far as facts and experience seem to warrant, to maintain a dynamic and developmental orientation in the discussion of the various personality disorders that constitute the thesis of psychiatry. Acknowledgment is made of the indebtedness to many writers who, during the past 5 years, have contributed much to the understanding and treatment of the various disturbances of personality functioning. It is the authors' hope that this book reflects these contributions. In response to many suggestions, a chapter "Psychiatry and the Law" has been added.

The Measurement and Appraisal of Adult Intelligence. By DAVID WECHSLER. 4th ed. Baltimore: Williams & Wilkins, 1958. 237 pp. plus appendices. $5.00.

The present, like the previous, edition of this book centers around the theory, findings, and applications of the authors' Adult Intelligence Scale, but its scope as well as its contents has been considerably extended. To a large degree it is a new book. That which has been retained from the older edition has been extensively rewritten, and five new chapters have been added. At the same time certain parts have been entirely omitted. The additions include chapters on the Factorial Composition of the W-B I and the W A I S, Changes in Intellectual Ability with Age, Sex Differences in Intelligence, Changes in Intelligence Consequent to Brain Damage, and the Use of the W-B I and W A I S in Counseling and Guidance. No longer included in the volume is the manual of directions for the W-B I, which constituted Part III of the earlier editions, and the chapter on the Need for an Adult Intelligence Scale. The specific changes that have been made in the revised Adult Intelligence Scale (now called the W A I S) have been amply discussed. Also, some space has been devoted to a comparative analysis of the 1939 and 1955 standardizations. The author's views on the nature of intelligence have not changed radically. He has, however, become increasingly convinced that intelligence is most usefully interpreted as an aspect of the total personality. He looks upon intelligence as an effect rather than a cause, that is, as a resultant of interacting abilities—nonintellective included. The author concludes at this time that the factorial analysis alone is not the answer. He speculates that perhaps a new statistic involving field theory and nonlinear differential equations may be required. It is of interest that the Wechsler scale has been translated into a number of languages and now is used in many countries throughout the world. Although no systematic comparison of results obtained in the different countries has as yet been made, one of the things that has been most impressive is the relatively few changes that have been necessary in the sub-test other than those depending upon language (vocabulary) or availability of certain kinds of knowledge (information, arithmetic, and picture arrangement). This would appear to lend support to the view that the basic elements of human intelligence are less conditioned by accidents of geography and local mores than one gathers from current literature.

Essentials of Gynecology. By E. STEWART TAYLOR. 1st ed. Philadelphia: Lea and Febiger, 1958. 491 pp.

This textbook was prepared to meet the needs of undergraduate medical students and young practitioners of gynecology. Materials included have been carefully selected in order to correlate the physiology, anatomy, and pathology with clinical practice. A chapter on preven-

tive medicine aspects of gynecology has been included. Details of examination of the female breasts have been covered both as to the physician's examination and the patient's self-examination. Special chapters have been included on the adrenal gland and on the pituitary gland. Malignancies of the genital tract have received emphasis because of their importance and the challenge presented in early diagnosis and proper treatment of neoplastic diseases. The medical, surgical, and radiation treatment of gynecologic diseases have been presented. Current usage of endocrine preparations is covered. Details for study of the infertile couple are given. The usual operative techniques used in gynecology, such as total abdominal hysterectomy, radical abdominal hysterectomy, anterior colporrhaphy, posterior colporrhaphy, fistular repair, vaginal hysterectomy, and others, are discussed in detail, and illustrations are included to help the student visualize the principles and objectives of the most frequently used gynecologic operations.

Family-centered Maternity Nursing. By Ernestine Wiedenbach. 1st ed. New York: G. P. Putnam's Sons, 1958. 324 pp. $5.50.

This book is designed primarily to answer the question of what the nurse needs to know and do to provide a service geared to all the needs arising out of the tremendous experience of childbearing. In addition this book answers many other questions. What should the concept of complete maternity care embrace? What contribution can it make to the individual in society? What is the role of the various professions providing service? And what part should expectant parents be encouraged and helped to play? This book is designed to explore the full range of the art and science of obstetric nursing. Interwoven with detailed scientific facts of practical guides to techniques are a broad and tender philosophy and an understanding, based on actual experience, of how good maternity nursing can enrich the childbearing experience and foster necessary adjustments within the family. To those who have had no opportunity for extensive observation of mothers in labor it makes clear how important supportive nursing is and of what it consists. Although this book is addressed primarily to nurses active in maternal and newborn health, it has a message for nurses not working exclusively in this field, as well as for teachers of nursing, students of nursing, obstetricians, and hospital administrators.

Diagnostic Medical Parasitology. By Edward K. Markell and Marietta Voge. 1st ed. Philadelphia: W. B. Saunders Co., 1958. 264 pp.

The arrangement of subject matter in this book follows essentially that of the course in Infectious Diseases presented at the School of Medicine, U.C.L.A. The various infectious agents are considered primarily in relation to their effect upon the host, and to the part or parts of the body which they infect. Thus, while certain periods are devoted to the anteric protozoa and Helminths, these are but part of an over-all consideration of the infectious agents which may cause anteric disease. In contrast to a number of textbooks on animal parasitology which present more academic detail than the average medical student can assimilate in the amount of time devoted to the subject, this book presents the essential facts needed by the medical student and the clinical laboratory technologist in a reasonable space. This text is designed so that the subject may be presented either independently or when considered in relation to the organ system affected.

Clinical Enzymology. Edited by Gustav J. Martin. 1st ed. Boston: Little, Brown & Co., 1958. 230 pp. $6.00.

In this volume an effort is made to outline the basic knowledge essential to an understanding of the field of clinical enzymology. This field is not new, but an old one revived by the biochemists' purification and crystallization of enzymes. It is now of course quite possible to give parenterally a proteolytic enzyme, which was thought quite impossible until comparatively recently. In addition, the biochemical basis for understanding of this field is reviewed, and the current status of clinical observations is surveyed. Finally, a concept essential to the extension of effort in this immediate sphere of medical endeavor is offered. No consideration is given to the topical application of enzymes, since this has been completely reviewed in other volumes recently.

Rehabilitation of the Cardiovascular Patient. By Paul Dudley White, Howard A. Rusk, Philip R. Lee, and Bryan

WILLIAMS. 1st ed. New York: McGraw-Hill Book Co., Inc., Blakiston Div., 1958. 165 pp. $7.00.

Within recent years increased attention has been paid to the rehabilitation problems of those who suffer from heart disease. This book is concerned primarily with the post-acute phase of heart disease during which time the patient must learn "to live with the limits of his disability to the hilt of his capabilities." Some of the material in it is based on fundamental, organized, systematic clinical research. A great deal of the material, however, represents the observations and conclusions of the authors and their colleagues based on their clinical experience. In this book the term "rehabilitation" is used in its broad context to designate all those services which the individual with a cardiovascular disability needs in order to live as rich, satisfying, and productive a life as possible. Rehabilitation in this context is the responsibility of every physician. This book, therefore, is not directed to any particular specialty of medicine but rather to all practitioners who bear the responsibility for the management of patients with cardiovascular disabilities.

Anomalies of Infants and Children. By D. MCCULLAGH MAYER and WILSON A. SWANKER. 1st ed. New York: McGraw-Hill Book Co., Inc., Blakiston Div., 1958. 436 pp. $12.00.

This book is written primarily for the student and general practitioner but may also be an aid to the obstetrician and pediatrician. It has as its primary purpose to correct the apparent lack of general familiarity with the cause and dangers of many anomalies, the prognosis for their correction, and the optimum time for the initiation of therapy. Unfortunately, such information is widely scattered and appears in isolated papers or in brief incidental chapters in books devoted to a single specialty such as orthopedics, pediatrics, or urology. Here for the first time such material is gathered into one volume. The chapters have been organized for simple and rapid reference. Their subjects include the role of genetics in the production of congenital malformation, the increasing incidence of the acquired deformities, and cancer in infants and children. The psychological implications on the parents, especially the mother, receive special notice. The authors likewise call attention to the danger of radiation for the removal of benign skin lesions and have devoted an entire chapter to the management of burns. In addition, they stress the critical importance of initial treatment of a burned patient and the avoidance of dressings and medication which may complicate later professional care. It is the authors' hope that this volume will prove to be a simple and ready reference and will make more general the knowledge of a subject of very pressing importance to thousands of young patients, their parents, their families, and their friends.

The Tissues of the Body, an Introduction to the Study of Anatomy. By W. E. LE GROS CLARK. 4th ed. London: Oxford University Press, 1958. 406 pp.

This well known textbook, which now is in its fourth edition, is primarily intended to serve as an introduction to the study of anatomy. It is, therefore, designed not only to be informative, but to be intellectually stimulating. Hence this book has long attempted to combine elementary knowledge with short discussion of recent advances in anatomical science. Since the third edition appeared 6 years ago, further significant advances have been made in certain aspects of anatomy, and a new edition has given the opportunity of incorporating references to some of these. Parts of the book have been rewritten, but the temptation to expand and elaborate has been avoided as far as possible. Some new illustrations have been added, and a few of the figures in the third edition have been replaced.

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Lown, B., and Levine, S. A.: Current Concepts in Digitalis Therapy. Boston, Little, Brown & Company, 1954, p. 28, par. 2.

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ITEMS OF CURRENT INTEREST

Air Force News

A bill authorizing $12 million for new School of Aviation Medicine research laboratories at Brooks Air Force Base has been cleared by Congress and is awaiting President Eisenhower's signature. The bill was passed by the Senate and returned to the House for approval of Senate amendments. Another bill appropriating the money is pending. The requested funds are for construction of approximately seven new buildings, in addition to the seven which are now being erected at a cost of $9 million. Major Gen. Otis O. Benson, Jr., who commands the School of Medicine, has announced that it will move into the first units, now approaching completion, in mid-year 1959.

The School of Aviation Medicine, Randolph Air Force Base, Texas, recently welcomed three newly assigned doctors. Joining the school for permanent assignment are: Lt. Col. Don E. Flinn; Maj. Cloid D. Green; and Maj. Robert L. Johnson. Colonel Flinn will be deputy chief of the Department of Neuropsychiatry in the institution at Randolph AFB; Major Green has been assigned to the department of physiology and biophysics in the medical sciences division and Major Johnson has been named assistant chief of the school's department of internal medicine.

American Heart Association

Completing a first decade of research support, the American Heart Association will allocate $8 million for scientific studies in the field of the heart and blood vessel diseases during the 1958–59 fiscal year. Two hundred and twenty-six grants-in-aid totaling $1,540,457 have been awarded to scientists working in 36 states and one foreign country (Lebanon). These grants represent an increase of more than 20 per cent over comparable grants awarded last year. They are additional to 186 national fellowship awards totaling $1,523,147 announced earlier this year.

Bell System To Present TV Show on Human Senses

The Bell System Science Series will present an hour-long color TV program devoted to the human senses, "Gateway to the Mind," over the NBC network on Oct. 23 at 8 P.M., EDT. The new program presents the story of what science has learned about the senses and how they function as the channels through which all knowledge of the external world is passed to the brain. Dr. George Wald, professor of biology at Harvard acted as principal adviser and Dr. Frederick Crescitelli, professor of zoology at UCLA, as consultant.

After its telecast, Bell Telephone Companies will make "Gateways to the Mind" available on 16-mm. color film for showings to school groups and interested organizations.

Fellowships Available in Psychiatry

The Foundations' Fund for Research in Psychiatry has announced that October 15 is the next deadline for the submission of completed applications for research fellowships in psychiatry, psychology, sociology, neurophysiology, and other sciences relevant to mental health. Interested persons are invited to write for details to: Foundations' Fund for Research in Psychiatry, 251 Edwards Street, New Haven 11, Conn.

Women's Medical Assn. Offers Fellowship

The Women's Medical Association of the city of New York is offering the Mary Putnam Jacobi Fellowship to a graduate woman physician, either American or foreign. This fellowship, in the amount of $2,000, will start October 1, 1959, and is

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given for medical research, clinical investigation or postgraduate study in a special field of medicine. Further information may be obtained by writing to Ada Chree Reid, M.D., 118 Riverside Drive, New York 24, N.Y.

Institute for Medical Communication Established

The Institute for Advancement of Medical Communication, a nonprofit organization, was recently formed to develop ways to increase the efficiency of information exchange among medical scientists, medical educators, and practicing physicians. The institute plans to devise and test new methods of disseminating medical information and to serve as an information center for medical organizations that request help with communication problems. The work of the institute will be financed by general and research grants both from private foundations and from the Government.

Charter members of the board of directors are Chauncey D. Leake, professor of pharmacology and assistant dean, Ohio State University College of Medicine; Homer W. Smith, professor of physiology, New York University College of Medicine; and Irving S. Wright, professor of clinical medicine, Cornell University School of Medicine. Richard H. Irr, assistant editor of the journal *Metabolism* and former medical director of Grune and Stratton, Inc., will serve as executive director. Temporary headquarters of the institute are at 37 E. 67th St., New York 21, N.Y.

International College of Surgeons

Another postgraduate course in surgery will be presented by the U.S. Section of the International College of Surgeons in conjunction with the Cook County Graduate School of Medicine, Chicago, October 13–25. Additional information may be obtained from the headquarters office, 1516 Lake Shore Drive, Chicago 10, or Cook County Graduate School of Medicine, 707 South Wood Street, Chicago 12.

The College will hold its fourth Around-the-World Postgraduate Clinic and Lecture Tour, beginning with departure from San Francisco on October 10. The return to New York will be on December 3. Sections of the College, in Hawaii, Japan, Hong Kong, the Philippines, Thailand, India, Egypt, Turkey, Greece, Italy and Spain will be hosts to the visiting surgeons at their clinics and hospitals. Further information may be had by writing to Dr. Arnold S. Jackson, tour coordinator, 16 S. Henry Street, Madison 3, Wis.

Dr. Beal Retires from Mellon Institute

Dr. George Denton Beal retired as a Director of Research at Mellon Institute on August 31, after 32 years of service. Dr. Beal has had a notable career in chemical research, pharmaceutical investigation and education, and research management in a number of industrial fields. He is the recipient of the Ebert Prize and the Remington Honor Medal from the American Pharmaceutical Association, and in 1955 received the Pittsburgh Award of the American Chemical Society. He holds the honorary degree of Sc.D. from both Mount Union College and Rutgers University.

National Foundation for Infantile Paralysis Fellowships

September 1 and December 1 are the current deadlines for applications to the National Foundation for Infantile Paralysis for postdoctoral fellowships in research and academic medicine or in the clinical fields of rehabilitation, orthopedics and preventive medicine. Applications for fellowships in the associate medical fields of physical therapy, teaching and occupational therapy teaching should also be filed by these dates. A spring date of March 1 is also provided.

Financial support of the Fellow varies according to his previous education, his professional experience, marital status, and number of dependents. For further information, write to Division of Professional Education, National Foundation for Infantile Paralysis, 301 East 42d Street, New York 17, N.Y.

Veterans Administration

Dr. Benjamin B. Wells, former director of professional services at the VA hospital in New Orleans, has been appointed to head

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VA medical education services in Washington, D.C. As director of the education service in the VA department of medicine and surgery, Dr. Wells will be responsible for education and training programs involving affiliation with 72 medical and 21 dental schools and training for residents, full-time physicians, dentists, nurses and auxiliary medical personnel. A former professor and dean of the University of Arkansas School of Medicine, he succeeds Dr. John C. Nunemaker, who left August 1 to become Associate Secretary of the American Medical Association Council on Medical Education and Hospitals, in Chicago.

World Medical Association

At the Opening Plenary Session of the XIIth General Assembly of The World Medical Association held recently, the doctors of the world initiated a campaign to keep the medical profession in every country fully informed on the effects of nuclear radiation. Dr. Louis M. Orr, consultant at the Institute of Nuclear Studies, Oak Ridge, Tenn., and president-elect of the American Medical Association, addressed the delegates on the subject "The Biological Effects of Nuclear Radiation."

The Second World Conference on Medical Education, sponsored by The World Medical Association, will take place in Chicago, August 30 to September 4, 1959. While this is the Second World Conference sponsored by the Association, it is the first time one has been held in thia country, and the first time a World Conference on Postgraduate Medical Education has been held anywhere. Speakers from 50 countries have been selected.

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NEWS FROM THE MEDICAL SCHOOLS

Albany

The College's department of public health will henceforth be known as the department of community health and there have been 17 new appointments to the teaching staff of the department. The change in name reflects a greater emphasis on field study in Albany and surrounding communities, resulting from curriculum changes adopted by the department within the past year.

Under the change, Dr. HERMAN E. HILLEBOE, State Health Commissioner and a member of the faculty since 1948, will become professor of epidemiology and community health. He formerly was professor of public health. Heading the list of new faculty appointees are Dr. THOMAS HALE, JR., director of Albany Hospital, and Dr. VICTOR N. TOMPKINS, assistant commissioner of health in charge of the division of laboratories and research in the state health departments, both of whom were named associate professors.

University of Chicago

Professor WILLIAM L. DOYLE of the department of anatomy has been named associate dean of the Division of Biological Sciences in charge of non-clinical affairs. Professor Doyle succeeds the late Dr. Merle C. Coulter.

Dr. LILLIAN EICHELBERGER has been advanced to the rank of full professor in the departments of surgery (orthopedic division) and biochemistry.

Dr. HEINZ GRUNZE, specialist in lung cytology, joined the medical staff of the university on September 1, as a lecturer and research scholar. Co-chairman of the department of medicine at the Free University of West Berlin, Dr. Grunze will be in the United States on a fellowship provided by the American Cancer Society with travel expenses paid by the Fulbright Commission.

Cincinnati

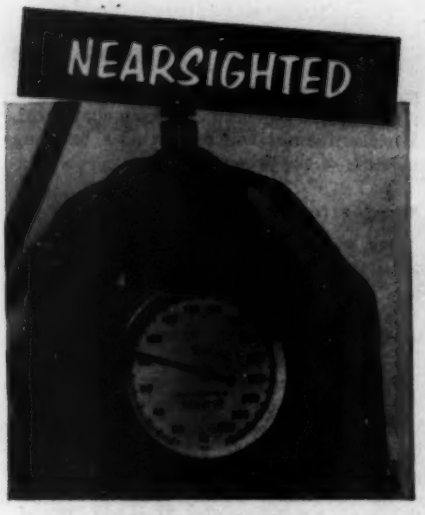
At the request of the Atomic Energy Commission, the nation's first handbook for physicians who must treat victims of serious radiation or nuclear accidents is being compiled by the College's department of radiology and radioisotope laboratory, in cooperation with the AEC's division of biology and medicine. Dr. EUGENE L. SAENGER, director of the radioisotope laboratory and associate clinical professor of radiology, is editor and chairman of the handbook committee. Assisting Dr. Saenger with the manual are Dr. CHARLES BARRETT, professor of therapeutic radiology and Dr. MITCHELL R. ZAVON, assistant professor of industrial medicine.

Dartmouth

The Dartmouth Medical School has acquired $4,300,000 in new capital in the past year, thus providing a start on the medical school's program for an enlarged faculty, broader curricular concepts, and improved teaching and research facilities. The grants include a $1.5 million gift from the Rockefeller Foundation, $1 million from the Commonwealth Fund, $1 million from the Public Health Service and $800,000 from the Ford Foundation. The $4,300,000 obtained is part of $10 million in new funds sought for a new medical science building and endowment for the medical science faculty.

Duke

Dr. PHILIP HANDLER, chairman of the medical center's biochemistry department, was named one of three American delegates to the Fourth International Congress of



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Biochemistry, held September 1-5 in Vienna, Austria. As an invited speaker, Dr. Handler presented a research paper in biochemistry.

Florida

Dr. MYRON W. WHEAT, JR., formerly instructor in thoracic surgery at Washington University School of Medicine, has been appointed assistant professor of surgery. Dr. Wheat will also be chief of the section of thoracic surgery at the College of Medicine.

Harvard

The university has given recognition to a rapidly developing branch of science—biophysics—and will offer a Doctorate for graduate study in the field with the first candidates expected to enroll in the fall of 1959. The degree in biophysics is offered through the division of medical sciences of the faculty of arts and sciences and the faculty of medicine, with most of the work being carried on in the departments of the medical school.

Jefferson

Announcement has been made by the Jefferson Medical College of Philadelphia and the Teacher's College of Temple University, of a joint effort in the study of medical education. The aims of the project are the evaluation of the purposes, goals and methodology of the processes of medical education in use in this nation, judgment of the efficacy of these current measures, and discussion of the applicability of educational methodology to the teaching of medicine.

Jefferson and the Teacher's College will provide men experienced in the two fields of medical instruction and general education respectively, who will join in seminary presentations and discussion groups. Guest participants from other institutions will be invited in relation to specific problems. Activation of the study is scheduled for the fall of this year.

Louisville

Dr. WILLIAM B. ATKINSON, associate professor of anatomy, has been appointed professor of anatomy and chairman of the department. He will succeed Dr. S. I. KORNHAUSER, who has been chairman since 1922. Dr. Kornhauser will remain as a teaching member of the department.

Marquette

Dr. EDWIN H. ELLISON, formerly professor of surgery at Ohio State University College of Medicine, has been appointed professor and director of the department of surgery, replacing Dr. CARL W. EBERBACH in the latter position. Dr. Eberbach will continue in the teaching program of the school.

In addition to his duties as a full-time member of the faculty, Dr. Ellison will be in charge of the educational and research programs in surgery for the medical school at the Milwaukee County Hospital and the Veterans Administration Hospital, Wood, Wis. At Milwaukee Children's Hospital, Dr. Ellison will assist and guide the expansion of the undergraduate teaching program in pediatric surgery.

Miami

Dr. SANFORD COBB, of the department of anesthesiology, has been appointed assistant director of anesthesiology at the Jackson Memorial Hospital, Miami.

New York Medical College

A new center for the treatment and study of heart diseases will be opened this winter at the College, with Dr. LEO M. TARAN as director. The program will coordinate all services available to the heart patient in every department, with surgical, medical and psychiatric teams working as one. It will be known as the cardio-pulmonary program.

New York University—Bellevue

Dr. CHESTER A. SWINYARD, former medical director of the Rehabilitation Center at the University of Utah College of Medicine, has been appointed associate director of the Children's Division of New York University–Bellevue Medical Center's Institute of Physical Medicine and Rehabilitation. Dr. Swinyard has also been appointed research consultant to the Association for the Aid of Crippled Children. The Children's Division

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of the Institute was developed in 1948 as a joint project with the Association under the direction of Dr. George G. Deaver.

North Carolina

The Rockefeller Foundation has granted $250,000 to the department of medicine for a five-year program of general development. Dr. CHARLES H. BURNETT, chairman of the department of medicine, will direct the program which will be concluded in 1963. It is the school's plan to further develop the general medical clinic in conjunction with the department of preventive medicine; maintain closer liaison and teaching with the basic medical sciences; and develop a foreign student exchange program, especially with graduate medical students from the South American countries.

Northwestern

A new health center for students of the university will be started early in 1959 on the Evanston campus. The project, to be known as Searle Health Center, will cost $800,000 which will be provided as a gift to the university by John G. Searle, a vice-president of the university's board of trustees and president of G. D. Searle & Co.

Construction of the center is scheduled to begin in March, 1959, and completion and dedication is scheduled for January, 1960.

Southern California

Dr. ROBERT WARD has been appointed physician-in-chief and director of research at Children's Hospital and professor and chairman of the department of pediatrics at the school of medicine. Dr. Ward, formerly professor of pediatrics at New York University, succeeds Dr. MERL J. CARSON who is now on sabbatical leave to take advanced training at the Neurological Institute, Queen's Square, London, England.

Sanford

Dr. JOSHUA LEDERBERG has been named to head a new department of genetics, effective in April, 1959. Currently, Dr. Lederberg is chairman of the department of medical genetics at the University of Wisconsin School of Medicine and has also served as visiting professor at the universities of California and Melbourne, Australia.

Establishment of the new department of genetics as well as of a new department of biochemistry is a further move toward integration of the medical school with the university.

A Russell Sage Foundation grant of $26,000 will finance plans for a new program combining medicine and sociology. Tentative objectives of the program include the development of basic socio-medical research projects and more joint teaching of medical and social sciences for the benefit of students and faculty alike.

S.U.N.Y. Brooklyn

New appointments to the faculty include Dr. GEDEON EROS, who was appointed clinical associate professor of pathology. Dr. Eros was an associate professor of pathology at the Royal Hungarian University until he was forced to leave Hungary in 1939. Since that time he has been giving a postgraduate course in neuropathology at Columbia University and has been director of clinical laboratories at Brooklyn State Hospital.

Dr. DAVID GROB is joining the faculty as professor of medicine and full-time director of medical services at Maimonides Hospital of Brooklyn. He was formerly associate professor of medicine at Johns Hopkins University.

Drs. MILTON PLOTZ and BURTON ZOHMAN, clinical associate professors of medicine, have been promoted to the rank of clinical professor.

S.U.N.Y. Syracuse

Dr. BLAIR V. JAGER, formerly on the faculty of the University of Utah College of Medicine, has been appointed associate professor of medicine and chief of the medical service of the Syracuse Veterans Administration Hospital.

Dr. JAMES DOUGHERTY is joining the faculty as associate professor of surgery and chief of the orthopedics section of the department of surgery. He had formerly been on the staffs of the University of Chicago Medical School and Albany Medical College.

Tennessee

Dr. RUSSELL H. PATTERSON, JR., has been named chief of staff of the City of Memphis Hospitals, succeeding Dr. M. K. CALLISON, who became dean of the College of Medicine July 1. Dr. Patterson is also an associate professor of surgery.

Dr. MICHAEL JAMES SWEENEY, medical director of the Nutritional and Pharmaceutical Products Division, Mead Johnson & Co., has joined the staff as assistant professor of pediatrics. In addition to his teaching duties, he will be connected with the pediatric research laboratory.

U. of Washington

Dr. MELVIN M. FIGLEY has assumed duties as head of the department of radiology. He was formerly assistant professor of radiology at the University of Michigan Medical School.

Yale

A new electronic instrument to aid the fight against hardening of the arteries and other diseases has been developed by Dr. SEYMOUR R. LIPSKY, assistant professor of medicine. Dr. Lipsky has received a $200,000 grant from the National Heart Institute of the N.I.H. and another $50,000 grant from the National Dairy Council to further his program of investigations.

PERSONNEL EXCHANGE

Faculty Vacancies

Two Physicians—Paris, France

The American Hospital of Paris wishes to recruit one or two American physicians for the attending staff of the hospital. The physician must have sufficient experience and authority to be appointed Assistant Chief of Medical Services and capable of substituting for the Chief of Medical Services during his absence from the hospital. Salary $10,000 per annum for services in hospital. He would also be encouraged to enter into private practice. During first few months after arrival, a small apartment in Doctors residence is available.

Hospital also wishes to recruit a young American physician prepared to enter practice as a general practitioner who would be assigned to attending staff of the hospital, and would be expected to assist in medical work of the hospital together with taking on private patients with thought of building up a private practice in Paris and adjoining territory. Hospital is prepared to provide small apartment in Doctors residence adjoining hospital and board at hospital, together with a guarantee that fees from private practice for first year would be not less than the equivalent of $10,000.

For further information, write Mr. Hugh S. Fullerton, Executive Governor, American Hospital of Paris, 63 bld. Victor Hugo, Neuilly sur Seine, France.

BIOCHEMIST: Applications are invited for the Chair of Biochemistry in the Faculty of Medicine. Minimum qualifications: M.D. with special training in Biochemistry, or Ph.D. in Biochemistry. Teaching and research experience essential. Salary in the range of $10,000, depending on qualifications and experience. Address applications or enquiries to L. G. Bell, M.D., Dean, Faculty of Medicine, The University of Manitoba, Emily & Bannatyne, Winnipeg 3, Man., Canada.

BIOCHEMIST: Teaching and research, department of biochemistry, University of Alabama. Salary and rank depend upon educational background, teaching and research activities. Reply should include personal history, complete bibliography and photo. Address: Emmett B. Carmichael, Department of Biochemistry, Alabama Medical Center, Birmingham 3, Ala.

OBSTETRICS and GYNECOLOGY: Full-time Board eligible instructor for expanding Department Obstetrics and Gynecology in large midwestern university. Ample opportunity for research, teaching and clinical experience. Address: V-68.

FELLOWSHIP IN CARDIOVASCULAR DISEASE: Active participation in cardiac catheterization, cine-angiocardiography, phonocardiography and experimental surgical laboratories. Should have completed internship. Possible later incorporation into surgical or medical residency. Apply to J. G. Mudd, M.D., St. Louis University Hospitals, 1325 S. Grand Blvd., St. Louis 4, Mo.

PEDIATRICIAN: Applications are invited for the position of full-time Associate Professor of Pediatrics at the University of Alberta, commencing September 1, 1958. The applicant should have a Ph.D. or M.D. degree or both and should be interested in undertaking and directing research in the field of biochemistry, as applied to pediatrics. Teaching duties will be related to the biochemical aspects of medicine and pediatrics. The salary offered is $7,500-$8,500 per annum with consulting privileges. Applications should include a curriculum vitae, a recent photograph, and the names of three referees and should be sent to: The Dean, Faculty of Medicine, University of Alberta, Edmonton, Alberta.

DIRECTOR OF NARCOTIC ADDICTION FOUNDATION: Applications are invited for the post of full-time Director, with teaching appointment within the Faculty of Medicine of The University of British Columbia. *Qualifications:* Certification in Psychiatry by the Royal College of Physicians and Surgeons of Canada or the American Board of Psychiatry, or their equivalent, and preferably with some experience in socio-psychiatric research. *Duties:* To direct the work of a therapeutic and research team of psychologists, social workers and resident personnel; to inspire and guide a program of treatment, rehabilitation and research where, for the first time, there will be developed a socio-medical approach to the treatment of the drug addict. The program will be one of gradual expansion including long term follow-up services in the social and vocational rehabilitation of the individual. Salary open, dependent on the qualifications and experience. Direct replies to the President, Narcotic Addiction Foundation of B.C., 835 West 10th Ave., Vancouver 9, B.C. All communications treated as confidential.

HISTOLOGIST-EMBRYOLOGIST: Junior appointment suitable for young doctorate, on medical faculty of Canadian medical school in Ontario. Facilities and time for research. Send curriculum vitae with application. Address: V-69.

OPHTHALMOLOGIST: Full-time assistant or associate professorship available in Eastern university medical school. Excellent opportunity for young man interested in academic career. Ample facilities, support and time for research. No private practice required. Address: V-70.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

PATHOLOGIST: Foreign trained. U.S. citizen. After working in a general hospital for 7 years, desires research position. Particularly interested in pathology of chronic infectious disease. Publications, including an extensive investigation of influence of tobacco smoke on cardiovascular system. Teaching experience but prefers a full-time research position. Address: A-347.

PEDIATRIC ALLERGIST: Age 36, Dipl. Amer. Board of Pediatrics. Currently fellow in pediatric allergy, seeking full or part-time teaching position in either Illinois or New York, as of July, 1958. Address: A-348.

MEDICAL BACTERIOLOGIST: Ph.D. Excellent background in clinical bacteriology, mycology, and public health bacteriology. Good background in parasitology and virology. Ten years teaching experience. Research published and in progress. Admin. experience in hospitals. Desires position in teaching and /or research and /or clinical microbiology. Address: A-349.

PATHOLOGIST: Age 32, board certified PA, traditionally trained and of semi-academic background, seeks full-time academic position with opportunity for combined teaching, service-type practice in university hospital. Especial interests in medical and pediatric pathology. South or southwest preferred. Address: A-350.

INTERNIST: Physician from Colombia, S.A. Professor of Internal Medicine of the Faculty of Bogota in 1953, assistant professor since 1936. Member of Academy of Medicine of Bogota. Publications: 3 books and many articles in Spanish. Fluent in English. Last five years Cultural Counselor of the Embassy of Colombia in Washington, D.C. Recent courses in cardiology and radioisotopes at Georgetown Univ. Interested in teaching in American university. Address: A-351.

PHARMACOLOGIST-TOXICOLOGIST: Ph.D., age 35. Married, 2 children. Assistant Professor of Pharmacology and Toxicology with approximately 10 years pre-clinical teaching experience in medical school and with position of Scientist in associated medical research facility. Present research in field of inhalation materials and involves radioisotopic and telmetering technics. Desires position in non-industrial institution where fundamental research is emphasized and teaching opportunities exist. Particularly interested in autonomic physiology-pharmacology of the respiratory tract. Address: A-352.

PREVENTIVE MEDICINE: British, married with one child. Medical graduate of Edinburgh University, 1952. Served two years National Service as Captain in Royal Army Medical Corps—M.O. in charge Chest Investigation Unit at Army Hospital. Several internships in medicine, surgery and experience in general practice. Post-graduate year, for D.P.H. in Edinburgh University. Presently on staff of Usher Institute of Public Health and Social Medicine, Univ. of Edinburgh, with teaching and research duties. Author and co-author of articles in medical journals. Desires appointment in American university in Public Health (Preventive Medicine). Address: A-353.

PHYSIOLOGIST: Ph.D., 1954. Male, 39, married. Teaching and research experiences. Presently assistant professor in dental school. Desires teaching position with research opportunities in medical or dental school. Address: A-354.

PSYCHIATRIST: Age 37, certified, F.A.P.A., at present associate professor in medical school, 9 years experience in teaching and private practice, numerous consulting appointments, desires relocation. Address: A-355.

MICROBIOLOGIST: Ph.D., 32, married male, six years research and three years teaching experience. Research interest in microbial pathogenicity, enterocci and immunology. Desires teaching position allowing time for research. Address: A-356.

BIOSTATISTICIAN: From basic medical sciences department and currently on overseas lectureship award on the application of statistical methods to biological research data, seeks academic post combining teaching and research. Address: A-357.

SURGEON: Certified general, thoracic. Age 37, 12 years training teaching hospitals. Publications; interested research, teaching. Desires academic position. Address: A-358.

PHYSIOLOGIST: Ph.D., M.D., 38, presently professor of physiology in prominent Midwestern medical school. Eleven years experience in teaching medical physiology. Over 50 publications in cardiovascular physiology. Investigative interests: experimental hypertension, cardiac output, regional blood flow, transcapillary transfer rates. Experienced radioisotopes. Desires position Middle Atlantic area or Pacific Coast. Teaching position preferred; research position acceptable. Address: A-359.

BIOCHEMIST: Ph.D. 1951. Diversified research experience: physiochemistry and structure studies of proteins, kinetics and thermodynamics of enzymatic reactions, steroid and antibiotic isolation. Chromatography, physical techniques and electronics. Publications. Desires career position in either academic or research institute. Address: A-360.

EPIDEMIOLOGIST: Age 31. M.D., Washington Univ., 1951. M.P.H. Yale 1957 (Dr. P.H. Yale 1959). Desires affiliation with department of preventive medicine and responsibilities for cardiovascular disease, epidemiological research. Available September 1958. Address: A-361.

INTERNIST-PSYCHIATRIC ORIENTATION: Certified, 36, desires to participate in practice of comprehensive medicine. Southwest location. Address: A-362.

GASTROENTEROLOGIST: Board eligible. Excellent university hospital training. Three years in GI clinical, teaching and research experience, and all GI procedures. Primary research interest in intestinal absorption. Present faculty appointment. Desires relocating in teaching position with definite research opportunity. Address: A-363.

MICROBIOLOGIST: Age 33, married. M.S. Bacteriology, 1949, Ph.D. Microbiology, 1958. Publications. Seven years teaching experience. Presently, research fellow in Eastern university. Desire teaching position with opportunity for research. Address: A-364.

CLINICAL NEUROLOGIST: British, M.A., M.D. (Cambridge, England), M.R.C.P. (London). Six years training on staff of National Hospital, Queen Square, London. Consultant neurologist on staff of London hospitals with long experience in research. Author of several books and numerous publications. Teaching experience and lecturing at American universities. Desires post in clinical neurology with facilities for teaching and research at professorial or assistant professorial level. Address: A-365.

PSYCHIATRIC SOCIAL WORKER: Female, single. Social Science and Administration Certificate, The London School of Economics and Political Science, England. Group work, B.S.W. University of Toronto, School of Social Work, Canada. Psychiatric Social Work, M.S.W. and Advanced Curriculum, Univ. of Pennsylvania. Experience in administration (United Nations). One year in residence in a State hospital followed by two years of clinical work in a university setting. Familiar with family centered teaching of medical students and residents. Desires faculty appointment. Available from September. Address: A-366.

MICROBIOLOGIST: Completing all requirements in September for the Ph.D. degree in Medical Parasitology, with a minor in Bacteriology and Immunology. Desires position in medical school teaching microbiology with opportunity for research. Address: A-367.

PATHOLOGIST: Age 44, certified C.P. and P.A. Academic background with extensive teaching experience. Particularly interested in medical and pediatric pathology. Organised and presently operating large department in university hospital. Desires to relocate in major city, east or west coast. Interested in combined teaching-service type practice in university or affiliated hospital. Address: A-368.

EPIDEMIOLOGIST: Age 30, M.D., M.P.H., requirements completed for Dr. P.H. Experience in obstetrics, student medicine, health department and chronic disease research. Desires teaching and research position in medical school department of public health and preventive medicine. Research in many fields; publications. Address: A-369.

MICROBIOLOGIST: Ph.D. Training, experience and publications in bacterial physiology (nucleic acid synthesis) and immunology or inmuno-chemistry (antibody formation); several years teaching experience of medical students, nurses and technicians. Desires medical school or other academic position in teaching and/or research. Address: A-370.

NUTRITIONIST-BIOCHEMIST: Ph.D. Physician. Eight years experience teaching medical and graduate students. Associate professor in leading Eastern university. Numerous publications and membership in leading professional societies. Desires medical school position where there is available a combination of pre-clinical and clinical teaching with research facilities. Principal interest and experience in nutritional biochemistry and metabolism. Address: A-371.

PATHOLOGIST: Age 34. Eight years diversified teaching and research experiences. Specialist interest in hepatic pathology. Present faculty appointment. Desires relocating in academic position. Address: A-372.

INDEX TO ADVERTISERS

Ames Company, Inc. xi
Appleton-Century-Crofts, Inc. iii
Bausch & Lomb Optical Co. ..... 3d cover
Blakiston Division, McGraw-Hill Book Co., Inc. ..... 2d cover
Burroughs Wellcome & Co., Inc. xvii
Cambridge Instrument Company xxi
Mead Johnson & Company ..... 4th cover
Lakeside Laboratories, Inc. xvi
Lea & Febiger vii
Eli Lilly and Company ix
J. B. Lippincott Company ..... xii, xiii
C. V. Mosby Company x
Ortho Pharmaceutical Corp. xix
Parke, Davis & Company ..... iv, v
W. B. Saunders Co. ..... 1st cover, i
Surgical Products Division, American Cyanamid Company viii
Taylor Instrument Companies xxv
Williams & Wilkins Co. ..... xiv, xv
Wyeth Laboratories xxvii
Year Book Publishers xxiii

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